City of Lancaster General Plan

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Introduction

The Role of Planning

The City of Lancaster. It is land, people, houses, business, industry, parks, schools, libraries, roads, utilities, open space, Joshua Trees, wildflowers, wildlife, and economic activity. These are the vital parts of a city.

These elements of the city are constantly changing: population increases, new homes are constructed, vegetation is removed to accommodate development. Change in any one affects all others, as they are intricately linked. New employment results in new residents which, in turn, creates a demand for new homes, roads, parks, schools, and so on.

To accommodate change, resources must be allocated; land, money, and labor are allocated for the construction of housing. All resources have a finite limit; there is only so much land and money. Ultimately, continuing growth and change will exhaust the capacity of the available resources. Deficient resource allocations results in a deteriorating quality of life for a city; roadway congestion, insufficient schools and parks, excessive taxation, and so on. As a consequence, it is necessary to establish priorities for the proper allocation of scarce resources among competing demands. This necessitates an understanding of the potential changes or demands on the physical, economic, social, and environmental resources which will be faced by a city in the future, an assessment of their capacity, and a program for their allocation or conservation. This is the role of planning.

The General Plan

The General Plan is a policy document designed to give guidance to those making decisions affecting the allocation of resources and future shape and character of the City of Lancaster. It, therefore, represents the official statement of the City of Lancaster regarding the development needed to achieve its physical, economic, social, and environmental goals. Although it is comprised of individual sections, or "elements", each dealing with a particular area of planning concern, the General Plan embodies a comprehensive approach in which the total range of community concerns and issues are treated in an integrated manner.

Integrated into this plan are the nine elements mandated by the State of California and two elective elements. These include Land Use, Circulation, Housing, Environmental Resources Management (consolidating Conservation, Open Space, Scenic Highways,

and Parks and Recreation), Noise, Seismic Safety, Safety, and Air Quality. A separate Environmental Impact Report (EIR) has been prepared on this plan.

Preparation of the General Plan

In February, 1978, the Lancaster City Council appointed a 14 member Citizens Advisory Committee (CAC) composed of residents and business leaders and assigned them the responsibility for the preparation of a General Plan for the City. Shortly thereafter, Envicom Corporation was retained to structure, guide, and provide technical input to the planning process. The CAC completed their work and submitted their proposed General Plan to the City in September, 1979. Copies of the draft plan were made available for public review and four hearings were conducted by the City Planning Commission. On 25 October 1979, the Commission adopted the Plan with a number of revisions and submitted the Plan to the City Council. Four public hearings were conducted by the City Council, followed by the Plan's adoption with modifications on 7 April 1980 (Resoultion 80-16).

Revisions

As the City and its resources are everchanging, it is periodically necessary to update and revise the General Plan. State law permits as many as three revisions of any plan element in one year. On the other hand, the plan must be updated no less often than every five years.

Relationship to Zoning

Zoning is generally considered the primary tool for implementing the General Plan. California state law requires that these be consistent with one another.

This Document

This document is the unabridged comprehensive General Plan of the City of Lancaster. It contains all background data, technical analyses, discussion of issues, as well as adopted goals, objectives, policies, and programs. While this document is detailed and lengthy, a companion document has been prepared to simplify the Plan's day-to-day use. This, the "Consolidated General Plan," encompasses these sections of the Plan which are to be administered and referenced on a continuing basis, including population, land use demand, employment, housing, and other forecasts and the adopted goals, objectives, policies, and programs. Omitted are most of the background data and technical analyses.

This comprehensive General Plan is structured on the following sections:

1. Land Use Element[1]
2. Circulation Element[1]
3. Housing Element[1]
4. Environmental Resources Management Element (consolidating the Conservation[1], Open Space[1], Scenic Highways[1], and Parks and Recreation[2] Elements)
5. Noise Element[1]
6. Seismic Safety Element[1]
7. Public Safety Element[1]
8. Air Quality Element[2]

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[1]Element required by the State of California.

[2]Optional Element.

1. Land Use Element

1.0 Introduction

1.1 Concerns

"Land use" is defined as the occupation or reservation of land or water for any human activity or any defined purpose, and includes the use of air space above the land or water. The Land Use Element of the General Plan is concerned with the distribution, location, and extent of the use of land for housing, commerce, industry, education, recreation and entertainment, circulation, service distribution, energy generation, waste disposal, and preservation.

In managing and using the resource of land for these functions, man can be sensitive to the constraints and opportunities that accrue to the characteristics of land and the use, or disregard these. Incompatible adjacency of functions and uses, economic wastefulness, blight and deterioration, air pollution, hazardous conditions threatening life and/or property, visual pollution, and social unrest are among the adverse problems which can result from insensitive and improper consideration of the management of land and uses located thereon. It is incumbent on a city and its residents to establish clear, understandable, and feasible mechanisms to guide the use of land in a manner which enhances the physical environment, economic conditions, and sociocultural environment.

It is these concerns which are addressed by the Land Use Element.

1.2 Relationship to Other General Plan Elements

In differing degrees, all of the elements of the General Plan will contain policies or proposals which relate to the Land Use Element. The Land Use and Circulation elements are almost inseparably related. The nature, routing, and design of circulation facilities are among the major determinants of the form of human settlement and of the uses of the land. Conversely, land uses create demand for circulation facilities.

The Safety and Seismic Safety Elements provide information and policies regarding natural and man-made hazards which need to be recognized in the Land Use Element. Together with the Open Space Element, they define lands to be reserved in a natural state and other lands for urban purposes or for production of food, fiber, or minerals. Considered along with the Conservation Element, they define criteria and standards and identify programs needed to control the impact of man's activities on the natural environment.

Noise attributable to the traffic generated and uses permitted by the Land Use Element is addressed in the Noise Element. Conversely, standards for the mitigation of adverse levels of noise exposure are discussed in both the Noise and Land Use Elements.

Specific policies to provide adequate housing to all residents of the city are enumerated in the Housing Element, while the Land Use Element prescribes the allocation of areas for the housing units.

1.3 Scope of the Element

Planning law directs that each city prepare a general plan covering its area of jurisdiction and any land outside its boundaries, which, in the planning agency's judgment, bears relation to its planning (Section 65300). The State directs that the planning area include the City's defined "sphere of influence" and other appropriate areas. The "sphere of influence", as defined in the law (Section 54774 of the Government Code) means "a plan for the probable ultimate physical boundaries and service areas of a local government agency." It is adopted by the Local Agency Formation Commission (LAFCO) and used to review proposed annexations. In determining the "sphere of influence", the LAFCO considers "...the type of development occurring or planned for the area, including but not limited to residential, commercial and industrial development; projected future population growth of the area; and the present and probable future service needs of the area."

For the City of Lancaster, the planning area extends from 80th Street West in the west to 80th Street East in the east, and from Avenue C and the Edwards Air Force Base boundary in the north to the hypothetical western extension of Avenue P and City of Palmdale boundary in the south. A "sphere of influence" has not been formally designated for the City and may encompass all of the planning area or a smaller portion thereof. Figure 1 depicts the City's corporate limits and planning area.

City Boundary and Sphere of Influence

Figure 1

2.0 Legislative Mandate

Government Code Section 65302(a) requires a land use element of all city general plans as follows:

> "A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of the land. The land use element shall include a statement of the standards for population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas."

State of California guidelines direct that the Land Use Element should include:

a. Identification of land use issues.

b. A statement of land use policies and proposals, distinguishing, where appropriate, among short, middle and long-term periods of fulfillment.

c. A description of the land uses and land use intensities for the planning area, including the relationships of such uses to social, environmental and economic goals and objectives.

d. The standards and criteria for physical development within each use area with consideration for land capacity.

e. A description of the land use pattern, including text and a diagram or other graphic representation such as a map.

f. An outline for implementation, including a description of measures necessary to achieve land use objectives and policies and the timing or staging of plan implementation.

3.0 Factors Influencing the Use of the Land

Numerous natural, social, and man-made systems influence the ultimate use of the land. Land as we see it used today in the City of Lancaster-- the types of use, their density, pattern, quality, and character-- has been shaped and will continue to be shaped by these factors. Population growth, employment opportunities, the availability of sanitation, water, and other public utility and service systems, flood hazards, high noise exposure, and other variables, each individually and in concert with all others, acts to induce, structure, or inhibit the use of the land.

These natural, social, and man-made factors are discussed in the following subsections. Attention is focused on their historic role in influencing land use in the City of Lancaster and how they may shape its future use.

3.1 Population

3.1.1 Overview and Historic Perspective

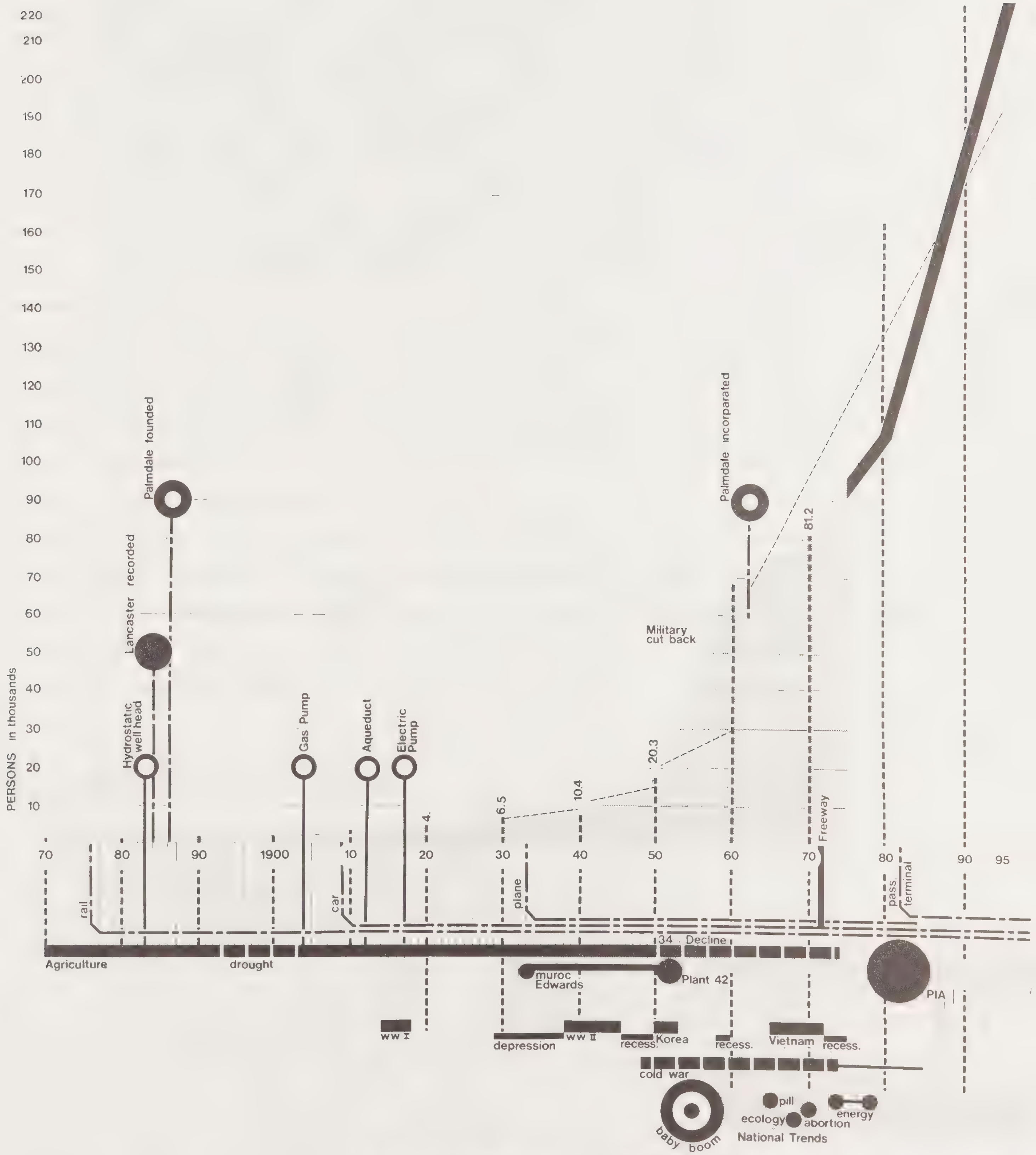
Historically, population growth in the City of Lancaster and the greater Antelope Valley has been related to the vagaries of its two principal industries: agriculture and aerospace. Advances or declines in their activity have been accompanied by corresponding shifts in population immigration and outmigration. In the future, it is anticipated that diversification of the industrial base coupled with a su stantial reduction in agricultural production will stablize an erratic pattern of growth. However, a significant change in this pattern and the rate of growth would occur on development of the nearby Palmdale International Airport (PMD).

Population growth of the City can be viewed in context of that of the Antelope Valley. For many years, the area which now constitutes the corporate limits of the City was the center of commerce and residential development for the Valley. Figure 2 illustrates the historic rates of population growth in the Valley and its relationship to significant natural and technological events.

The earliest residents of the Antelope Valley were the Indians who camped along the intermittent streams and near artesian springs which irregularly flowed. Immigration of the Spanish during the early nineteenth century saw the establishment of the San Fernando Mission. The western portion of the Antelope Valley was used as a supporting rancho. During the 1850s and 1860s this area, Rancho La Liebre, was primarily used for grazing.

In this period, the Antelope Valley was isolated and generally considered unfit for habitation. On the fringes of the great American desert, the Valley must have seemed harsh and barren. Running water was rare and the temperature ranged from extreme highs to extreme lows. To visitors from humid eastern America, the area suggested neither familiar nor effective potentials for agriculture. After California Statehood in 1849, as demands in the San Francisco-Sacramento corridor sparked the need for southern California agricultural products, the area continued to be sparsely populated. A few scattered homesteads were located near streams on the southern fringes or at roadway stations for the Valley's single stagecoach line, along the the San Andreas rift zone. The only other

FIGURE 2



POP. GROWTH / TECHNOLOGICAL EVENTS

SOURCE: Quinton-Redgate,
North Los Angeles County General Plan

residents were those who tended the cattle that grazed in the West Valley.

Though the Southern Pacific Railroad laid tracks through the Antelope Valley in 1876, active development of agricultural lands of that Valley did not begin. In the 1880s, however, completion of a second transcontinental railroad to San Diego and eventually Los Angeles, rivalling the first link that terminated in San Francisco, resulted in a land boom for Southern California. Land was available in the Antelope Valley and promoters extolled the virtues of its lush grasslands and bountiful water, for the Valley was then in a wet cycle. Added to the attractiveness of the Valley were breakthroughs in well technology and new State legislation that encouraged large-scale agricultural devleopment. In 1884 the community was established as a point of access to the railroad and as a central focus of the fast-developing agricultural activities which surrounded it.

Intensification of activity along the southern fringes of the Antelope Valley, near flowing water, was made possible by assistance from State legislation. The Wright Irrigation Act of 1887 gave rural areas municipal-like powers to construct or purchase and operate irrigation systems. Thus, a group of farmers could gain access to a water supply that an individual could not afford. Instead of scattered homesteads, agricultural colonies and irrigation districts were established on the southern fringes. Six districts were organized between 1890 and 1895: Neenach, Manzana, Armagosa, Palmdale, Little Rock Creek, and Big Rock Creek.

Invention of a hydrostatic well head in 1883 for use in tapping artesian water was another factor that contributed to the dynamically changing land use pattern. Artesian water was first discovered near the City of Lancaster, but the area of flow also extended around Rosamond Dry Lake. Because the artesian well area contained alkali soils, crops familiar to wetland farmers did not do well there. The uniqueness of this arid land, with its wet and dry climatic cycles, was sharply apparent with the onset of a dry period in 1893.

The dry cycle in the Antelope Valley continued until 1903. The bountiful water evaporated, artesian flows diminished, colonies failed, and lands were abandoned. Thousands of acres that had been dry-farmed in the southern fringes of the west Valley were the first to

deteriorate. Of the nearly fifteen thousand acres of orchards (mostly almonds, olives and prunes) that had been planted by 1893, only five thousand acres still existed in 1910.

During the first decades of the twentieth century, when the drought was over, the modern agricultural pattern was established. This pattern, which continued until the 1950s, was made possible by a realistic evaluation of soil limitations and a reliance on irrigation by pumping groundwater. Alfalfa was grown and harvested in areas away from the high alkali soil zones near Rosamond Dry Lake. When gasoline pumps became available, agriculture shifted to the west instead of showing a dependence on the east Valley artesian wells. This pattern was further promoted after 1917 when electricity, and subsequently electric pumps, came to the Valley. Orchards continued on the slopes of the southern fringes, primarily around Quartz Hill and Littlerock. Lancaster served as the central farm trade center, its population growing to 4,500 by 1940.

In 1933, a vast open area to the north, Rogers Dry Lake, was selected as a military testing center for aircraft because of its excellent year-round weather. Known as Muroc, the center was later renamed Edwards Air Force Base, and was to trigger irreversible changes in the growth of the Valley. Lancaster became the place for servicemen to visit and also provided homes for military families. During World War II, the air force base became the testing ground for numerous military aircraft, including the P-38 Lightning fighter, B-24 Liberator, and B-25 Mitchell bombers. Intensification of Edwards was accompanied by an immigration of individuals with high technical skills. As a result, Lancaster more than doubled its population to 10,500 during the 1940s.

Subsequent to World War II, the onset of the cold war with the Soviet Union and the Korean War in 1950 acted as catalysts for massive expenditures for weaponry and jet aircraft. Activity at Edwards continued at a high pace, with the development and testing of the jet-powered generation of aircraft. To fulfill the increasing need for facilities, Palmdale Airport was sold to the federal government in 1952 and redesignated as Air Force Plant 42. As with Edwards, the site was particularly suited for the testing of aircraft due to the climate and largely unpopulated land. Plant 42 was begun as a national center for jet interceptor production and testing. One year later, Lockheed Corporation opened a facility nearby. These events coincided with the baby boom and a

mass influx of population seeking a new lifestyle in Southern California.

As a consequence, Lancaster and the surrounding Antelope Valley benefited by increased employment opportunities and a new demand for housing and services. By 1960, Lancaster experienced an unprecedented growth rate of ten-fold over the previous decade, increasing the population of its immediate and peripheral areas to 30,000 persons. During the same time, the Antelope Valley had grown to 68,000, a 400 percent increase.

A further consequence was a wave of land speculation in anticipation of future urban development. This new emphasis on aerospace employment, coupled with increased property taxes, inflated land prices, and higher water costs signalled the end of the agricultural area. From 1954 to 1972, agricultural acreage declined 34 percent. A major shift had occurred from that of an agricultural economy to dependence on a single industry during a ten-year period.

As had been historically true in the Antelope Valley, it was not long before the era of prosperity degenerated into an economic downturn. When the Soviet Union launched its first space satellite, Sputnik, in October, 1958, the military emphasis on aircraft shifted almost overnight to satellites and spacecraft. Contracts for airplanes and their parts from Lockheed were cancelled abruptly. In a matter of months, the number of people employed in the Valley's aircraft industry dropped from approximately 7,000 to less than 2,000. Side effects were widespread, with an outmigration of workers from Lancaster to other areas of Southern Californi, seeking jobs in more diversified industrial areas.

By the middle of the 1960s, commercial airline utilization had grown at a tremendous rate for both business and leisure. In turn, the airlines projected an accelerating demand, and sought bigger and a larger number of aircraft. This optimism led to a decision by the aircraft industry to construct high capacity wide-bodied aircraft. Competing with Boeing and McDonnell Douglas, Lockheed began constructing the L-1011 at the Palmdale facility, once again boosting the economy of the area. In the same optimistic spirit, a number of studies were prepared projecting a long-term need for significant additional runway capacity above that of the existing airports in Southern California. Estimates indicated a need for another airport, one whose capacity could

exceed 100 million annual passengers which would make it the world's largest airport. Because of the large land requirement for such a facility and the desire to prevent the traditional incompatibilities of airports and their surroundings, the relatively sparsely-settled Antelope Valley was selected as the optimal site. Announcement of the development of a major international airport spurred another cycle of real estate speculation. Estimates of growth in the Valley as a result of the aircraft approached 650,000 over a twenty-year period.

During this period, other construction projects were progressing in various parts of the Valley that would have impact on the economy of the area. Construction of the Antelope Valley Freeway was begun in the mid-1960s and completed eight years later. A second pipe was added to the Owens River Aqueduct, carrying water to the City of Los Angeles from the Owens Valley, crossing the western end of the Antelope Valley. The Feather River project, or the California State Aqueduct, was constructed across the Valley, employing hundreds of people on various phases until its completion in late 1971.

After the initial intense growth in aircraft production in the late 1960s and early 1970s, severe declines in the economy resulted in the postponement and cancellation of many aircraft orders. Lockheed sharply reduced its employment. This, coupled with a high rate of inflation and projections of a long-term economic recession, resulted in a reconsideration of the need and magnitude of Palmdale International Airport. Plans for its operation were scaled down significantly. From the projected 100 million annual passenger facility, it was reduced to a 12 million annual passenger facility oriented to serve the aviation needs of a sub-regional, rather than regional, population.

In recent months, the commercial airline industry once again has seen a sharp rise in its patronage due to the effects of decontrol and cheap airfares. Though passenger miles and growth rates are at an all time high, the airline industry has been more cautious in assessing the long-term effects and the need for acquisition of additional aircraft. They have proceeded conservatively, and, though aircraft orders have increased, they have been at moderate rates. As a consequence, Lockheed has increased its employment over the low levels of the mid-1970s, but not at the expansionary and optimistic levels of the late 1960s.

This has tended to help stabilize the employment base which has attracted the immigration of individuals and families. This, coupled with the area's clean air and rural quality, has induced a relatively steady immigration of individuals and families in recent years.

Population growth within the corporate limits of the City of Lancaster since 1950 is depicted in Table 1.1. These statistics represent a disaggregation of data previously compiled for a statistical area larger than the City. Though significant fluctuations have occurred in individual years[1], a steady growth rate has been experienced over this period. Rates of growth are commensurate with those of nearby communities and the greater Antelope Valley.

3.1.2 Existing Population

It is estimated that the resident population in the City of Lancaster in January, 1979, was 45,365 persons. This is considered to be highly accurate, as it was derived from a parcel-by-parcel inventory of dwelling units for the City's Housing Assistance Plan of 1979. Its derivation is summarized in Table 1.2.

3.1.3 Population Forecasts

Estimates of a city's future population are, by their nature, at best difficult and somewhat imprecise. Many unknown and unexpected variables can influence the rate of growth. Forecasts can only account for the information about past trends and anticipated future events known at the time at which they are made. They reflect an understanding of historic rates of growth, the factors which incurred these rates, and the factors which will tend to continue or alter the current trend into the future.

Occurrence of an unforeseen event can radically affect real growth. As discussed, Lancaster's population growth historically has been subject to a number of such factors. Introduction of energy-activated water pumps and the aerospace industry caused significant fluctuations in the real rate of growth. It can be predicted with some degree of confidence that the future will continue to see the emergence of economic and social conditions which

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[1] Employment at Lockheed Corporation was severely reduced in 1974 and 1975.

TABLE 1.1

CITY OF LANCASTER ESTIMATED POPULATION
(HISTORIC)

Year	*Estimated Population*	*Annual Increase (Percent)*	*Ten-Year Increase (Percent)*
1950	10,250	-	-
1960	31,503	N.A.	207
1971	37,488	N.A.	19
1972	40,337	7.6	N.A.
1973	41,347	2.5	N.A.
1974	43,502	5.2	N.A.
1975	42,027	-3.5	N.A.
1976	43,433	3.3	N.A.
1977	44,044	1.4	N.A.
1978	44,800	1.7	N.A.
1979	45,365	1.3	21

Source: Envicom Corporation,
County of Los Angeles, Department of Regional Planning,
Quarterly Bulletin on Population and Dwelling Units.

TABLE 1.2

CITY OF LANCASTER ESTIMATED POPULATION
JANUARY 1979

Dwelling Units			
Type	*Number*[1]	*Population/ Dwelling Unit*[2]	*Estimated Population*
Single-Family	11,727	3.2	37,526
Multiple[3]	4,355	1.8	7,839
TOTAL:	16,082		45,365

[1] Urban Futures, City of Lancaster, Housing Assistance Plan, March 1979.

[2] 1970 U.S. Census, State of California Department of Finance, County of Los Angeles.

[3] Includes mobile homes.

will influence unpredictable changes in population growth.

For these reasons, a range of population forecasts have been prepared for the City of Lancaster for the 21-year planning period. These account for variable rates of economic development, births, natural attraction, and the potential introduction of an international airport at Palmdale. The foundation for these are the two general projections methods used and accepted by the State of California and Southern California Association of Governments (SCAG): E-O and D-150. The first, E-O, is a conservative projection which reflects the actual rates of growth during the last decade. It accounts for the decline in and stabilization of a lower birth rate and reduction of immigration to the State which has been experienced.

This series forecasts an annual growth rate of 0.4 percent for the County of Los Angeles. It is recognized that the City of Lancaster and surrounding Antelope Valley areas may be more competitive than other Los Angeles County areas in attracting future employment opportunities and population, as they are relatively undeveloped, have good availability of urban services (including water and sewer), have clean air, and do not exhibit significant problems of social disruption and crime. As a consequence, the E-O series projects a more optimistic annual growth of 2.3 percent for this area, without development of Palmdale International Airport. Growth at this rate would yield a population of 73,132 persons by the year 2000, an increase of 27,767, or 61.2 percent.

Alternatively, the D-150 population series is a more optimistic projection which reflects a higher rate of immigration and birth. These are close to the rates experienced in the area during the mid-1950s to the late 1960s. For the County of Los Angeles, the D-150 series projects a per annum increase of 1.1 percent. For the same reasons as the E-O series, a more optimistic rate of 5.2 percent per year is forecast for the City of Lancaster and its neighboring Antelope Valley areas.

Of the factors which may significantly alter the rate of population growth, one is paramount: development of Palmdale International Airport (PMD). Though its scale of activity has been substantially reduced from earlier plans, PMD will still incur a significant impact on the City's growth. Currently, PMD is projected to serve one

(1) million annual passengers (MAP) in 1990, eight (8) MAP in 1995, and twelve (12) MAP in 2000.[2] An additional 54,300 residents would be attracted to the region by 2000 at these operational levels. Forecasts of the additional population growth attributable to development of PMD are listed in Table 1.3. It is estimated that 60 percent of the population growth generated by the airport will be accommodated in the City of Lancaster. This would yield an additional 32,580 residents in the City by the year 2000. Table 1.4 summarizes the estimated increases in population in the City incurred by PMD. Adding the PMD induced population to the baseline E-O and D-150 projections would result in a residential population of 105,712 and 164,118 in the City, respectively. This represents an increase of 44.5 percent above the E-O forecast and 24.5 percent above the D-150 forecast.

Population forecasts for the City of Lancaster using the series E-O and D-150 growth rates, with and without Palmdale International Airport, in five-year increments, are listed in Table 1.5. Their range is substantial. The highest and lowest are separated by almost 91,000 persons, or 124 percent. Selection of one, however, as "the estimated population" does not appear reasonable because of the variables affecting its level, and the range will be used for future planning purposes. Recent growth rates and economic trends suggest that the E-O forecast with the development of PMD is, currently, the most credible (105,712 residents in 2000). Monitoring of actual development in the next five years will assist in refining this forecast.

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[2] Arthur D. Little, Inc., Environmental Impact Report for Palmdale International Airport.

TABLE 1.3

ESTIMATED POPULATION GENERATED BY PALMDALE INTERNATIONAL AIRPORT

Area	*1990*	*1995*	*2000*
Antelope Valley	8,600	23,100	54,300
Santa Clarita Valley	3,700	9,900	23,300
TOTAL:	12,300	33,000	77,600

Source: Arthur D. Little, Inc.

TABLE 1.4

ESTIMATED POPULATION GROWTH IN THE CITY OF LANCASTER
ATTRIBUTABLE TO PALMDALE INTERNATIONAL AIRPORT

Year	*Antelope Valley Increase*	*Lancaster's Capture (%)*	*Lancaster's Population Increase*
1990	8,600	60	5,160
1995	23,100	60	13,860
2000	54,300	60	32,580

Source: Envicom Corporation

TABLE 1.5

CITY OF LANCASTER POPULATION FORECAST

Year	*Series E-O* *Annual % Increase: 2.3* Population w/o PMD	Population w/PMD	*Series D-150* *Annual % Increase: 5.2* Population w/o PMD	Population w/PMD
1979	45,365	45,365	45,365	45,365
1980	46,408	46,408	47,724	47,724
1985	51,997	51,997	61,492	61,492
1990	58,258	63,418	79,231	84,391
1995	65,273	79,133	102,088	115,948
2000	73,132	105,712	131,538	164,118

Source: Envicom Corporation.

3.2 Employment

3.2.1 Overview and Historic Perspective

Population growth in the City of Lancaster will be a function of the employment opportunities which are available in the City and surrounding areas. Forecasts in the preceding subsection are based on the continued and increased availability of jobs. It is necessary for new and diversified job opportunities to become available, or growth will stagnate. As discussed, the establishment of a new major class of employment, related to the activities of PMD, will be the single greatest factor in inducing growth.

To understand the employment opportunities which serve the residents of Lancaster, it is necessary to look beyond the boundaries of the City. Many of the City's residents are employed elsewhere. In general, the employment market for Lancaster encompasses Palmdale, Quartz Hill, the Antelope Valley foothill communities, and Edwards Air Force Base. Employment opportunities in the City are deficient relative to the population they serve and will likely remain so as PMD is developed outside its boundaries. Though this the case, it is essential for Lancaster to aggressively attempt to attract new industries to increase its revenue base.

Historically, the manufacturing, wholesale and retail trade service, and government industries have comprised the largest sector of the labor market. Consistently, they have provided 75 to 82 percent of the employment opportunities. Consisting primarily of aerospace employment, the manufacturing industry has fluctuated wildly during the last 20 years. Between 1959 and 1970, the industry increased by 43 percent. However, between 1964 and 1965, it lost 48 percent of its employment and, again, lost 16 percent between 1967 and 1968. On the other hand, employment in the governmental sector has risen constantly and dramatically. In the 1959 to 1970 period, the number of government jobs increased from 2,100 to 5,500, or 162 percent. This growth occurred at a time that the resident pcpulation increased by 20 percent. Agriculture, once the area's principal industry, has remained steady in its employment, though in a long-term decline. Employment opportunities in the Lancaster market area during this period are listed in Table 1.6. according to the Standard Industrial Classification (SIC).

TABLE 1.6

LANCASTER COMMUNITY LABOR MARKET EMPLOYMENT BY INDUSTRY - 1959-70

Industry	*1959*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*1969**	*1970**
Total Employment	12,200	11,900	12,300	14,150	15,800	15,000	13,500	14,600	16,200	16,000	22,800	26,300
Agriculture, Forestry, and Fisheries**	400	350	350	350	300	300	400	400	500	500	1,600	1,700
Contract Construction	1,000	850	700	750	800	950	800	900	800	900	3,000	2,900
Manufacturing	3,500	3,100	3,800	5,300	5,600	4,450	2,300	2,600	3,000	2,500	2,800	5,000
Transportation, Communications, and Utilities	600	550	600	600	800	750	800	800	900	900	800	900
Wholesale and Retail Trade	3,100	3,200	3,000	3,050	3,000	3,100	3,300	3,400	3,500	3,600	3,700	4,000
Finance, Insurance, and Real Estate	300	300	300	300	400	400	400	400	400	400	900	1,000
Services	1,200	1,300	1,250	1,300	1,700	1,750	2,000	2,300	3,400	3,500	5,000	5,300
Government	2,100	2,250	2,300	2,500	3,200	3,300	3,500	3,800	3,700	3,700	5,000	5,500
Community Population (estimated)		40,000		43,900		46,000		52,100		52,900		82,300

Note: Employment figures include wage and salary workers, self-employed, unpaid family workers, and domestics.

*Portions of North Los Angeles County were added to the community survey in 1969 and 1970.
**Includes mining employment in 1969 and 1970.

Source: California Department of Human Resources Development, Research and Statistics Division.

3.2.2 Current Employment

Though no thorough census updates have been conducted of the Lancaster area since 1970, surveys and assessments have been undertaken which provide a general indicator of the current character of the labor market. In general, it is assumed that the relative distribution among employment classifications has remained much the same. Periodically, there have been significant fluctuations in individual sectors, as exemplified by the drop in Lockheed's employment from 7,110 in the early 1970s to the current 4,400 and a similar reduction in North American Rockwell's from 1,150 to 360 during the same period. Since 1976, there has been some stabilization of the economic base, and it is currently experiencing steady growth.

Estimates of the Lancaster market area's employment are listed in Table 1.7. Classifications have been modified somewhat to facilitate subsequent land use demand analyses. As before, the industrial (5,000 employees), commercial (12,000 employees), and government (6,400 employees) sectors dominate, accounting for 81 percent of all job opportunities. Further, it is estimated that the area provides approximately six percent too few jobs (1,890) to meet the employment needs of the residents.

Estimates of the major individual sources of employment for residents of the Lancaster area are listed in Table 1.8. These are listed according to their date of source, and should be considered as general estimates only. As would be expected, Lockheed Corporation and Edwards Air Force Base are the two largest employers, with a total of in excess of 6,500 civilian employees. Antelope Valley Hospital is also a major employer with 770 employees.

3.2.3 Employment Forecast

Estimates of the future employment opportunities in the Lancaster market area in the year 2000 have been developed for the two baseline population forecasts, E-O and D-150, with and without the development of PMD. Presently, the market area contains 90,059 residents[1], 50 percent of which are located in the City of Lancaster. Without development of PMD, it is projected that the resident population will increase to 148,522 to 274,709

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[1]Quinton-Redgate, Draft North Los Angeles County General Plan, Arthur D. Little, Inc., Palmdale International Airport Environmental Impact Report.

TABLE 1.7

1978 ESTIMATED EMPLOYMENT OPPORTUNITIES
LANCASTER LABOR MARKET[1]

Industry		*Employment*	*Percentage*
Airport		300	1.0
Agriculture		1,400	4.8
Industrial[2]		5,000	17.2
Transportation, Communications, and Utilities		900	3.1
Commercial[3]		12,000	41.4
Government		6,400	22.1
Construction		3,000	10.3
Total Job Opportunities		29,000	100.0
Population:	90,059		
Participation Rate:	34.3		
Employment Demand:		30,890	
Net Leakage:		- 1,840	

[1] Arthur D. Little, Inc. (PMD EIR), Southern California Association of Governments.

[2] Includes manufacturing; warehousing, fabrication, and assembly; research and development; and wholesale trade.

[3] Includes retail trade; commercial recreation; finance, insurance and real estate; and professional/personal services.

TABLE 1.8

LANCASTER MARKET AREA MAJOR EMPLOYERS

Employer	*Employees*	*Estimate* 1979[1]	1974[2]
Lockheed Corporation	4,400	X	
Northrup Corporation	450	X	
North American Rockwell	360	X	
Edwards Air Force Base			
Civilian	1,852		X
Military	2,847		X
Los Angeles Air Route Traffic Control Center	586		X
Antelope Valley Hospital	770	X	
Antelope Valley College	178	X	
Antelope Valley Turkey Growers' Association	160		X
Ryckebosch & Sons	100		X
Asphalt Construction Company	70		X

[1] City of Lancaster, Planning Department.

[2] Antelope Valley Board of Trade, 1974 Industrial and Transportation Directory.

by the year 2000. Development of PMD will result in an additional 54,300 residents in the market area, or a total of 202,822 to 329,009 persons. These estimates are summarized in five-year increments in Table 1.9.

In the ensuing 21 years, it is expected that agriculture will continue to decline in its share of the employment market, while commercial, industrial, and governmental sectors will increase.[2]

Without development of PMD, a cumulative increase of 23,282 to 67,458 jobs will be realized (E-O and D-150 projections, respectively) in the market area. This is an increase of 80 to 232 percent. Continuance of the current growth trends would result in the lower number, while increased state immigration and birth rates would spur the latter.

Development of PMD would generate increased employment in all but the agricultural sector. These increases will be realized in the employment: (1) directly related and necessary to the airport's operation; (2) in airline-related manufacturing activity, research and development, and supporting service and retail operations; (3) generated by the spending of the direct and indirect airport employees and their families; and (4) generated by the spending of non-resident airline passengers. An estimated 24,500[3] jobs would be generated in the Lancaster labor market by the year 2000 by the development of PMD. Of these, 7,215, or 29 percent, would be direct airport and airline employees. The most significant increase would be realized in the commercial sector, with an increase of 11,084 jobs, 45 percent of the total, and approximately double that durrently found in the market. This would increase the total employment opportunities to a range of 76,482, an increase of 47,482 over existing levels (164 percent) to 120,648, an increase of 91,658 (316 percent) for E-O and D-150 forecasts, respectively.

Employment forecasts for the Lancaster market area for the E-O and D-150 population series, with and without PMD, are summarized in Table 1.10.

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[2]Estimates of Arthur D. Little, Inc., Palmdale International Airport Environmental Impact Report.

[3]Ibid.

TABLE 1.9

ANTELOPE VALLEY (LANCASTER MARKET AREA)
POPULATION FORECAST

	SERIES E-O *Annual % Increase: 2.3*		*SERIES D-150* *Annual % Increase: 5.2*	
Year	*Population w/o PMD*	*Population w/PMD*	*Population w/o PMD*	*Population w/PMD*
1978	90,059	90,059	90,059	90,059
1980	94,249	94,249	99,669	99,669
1985	105,598	105,598	128,421	128,421
1990	118,314	126,914	165,469	174,069
1995	132,560	155,660	213,203	236,303
2000	148,522	202,822	274,709	329,009

*Arthur D. Little, Inc. (PMD EIR).

Source: Envicom Corporation.

TABLE 1.10

ANTELOPE VALLEY EMPLOYMENT FORECAST

	1978[1] Total	1978 %	2000 %	E-O w/o PMD Total Emp.	E-O w/o PMD Net Incr.	E-O w/PMD PMD Gen. Emp.[2]	E-O w/PMD Total Emp.	E-O w/PMD Net Incr.	D-150 w/o PMD Total Emp.	D-150 w/o PMD Net Incr.	D-150 w/PMD PMD Gen. Emp.[2]	D-150 w/PMD Total Emp.	D-150 w/PMD Net Incr.
Population	90,059												
Labor Participation Rate		34.3	35	148,522			202,822		274,709			329,009	
Total Employment Demand	30,890			51,982					96,148				
Current Job Opportunities	29,000												
Net Leakage	1,890	6.1											
Employment by Industry													
Airport	300	1.0		-	-	7,215	7,215	6,915	-	-	7,215	7,215	6,915
Agriculture	1,400	4.8	3	1,559	159	-	1,559	159	2,884	1,484	-	2,884	1,484
Industrial[3]	5,000	17.2	22	11,436	6,436	1,432	12,869	7,869	21,153	16,153	1,432	22,585	17,585
Transp, Commun., Util.	900	3.1	4	2,079	1,179	591	2,670	1,770	3,856	2,956	591	4,447	3,547
Commercial[4]	12,000	41.4	43	22,353	10,353	11,084	33,437	21,437	41,344	29,344	11,084	52,428	40,428
Government	6,400	22.1	23	11,956	5,556	2,415	14,371	7,971	22,114	15,714	2,415	24,529	18,129
Construction	3,000	10.3	5	2,599	(401)	1,762	4,361	1,361	4,807	1,807	1,762	6,614	3,614
TOTAL:	29,000			51,982	23,282	24,500	76,482	47,482	96,148	67,458	24,500	120,648	91,658

[1] Southern California Association of Governments; Arthur D. Little, Inc. (PMD EIR).

[2] Arthur D. Little, Inc. (PMD EIR).

[3] Manufacturing, warehousing, fabrication and assembly research and development, and wholesale trade.

[4] Retail trade; commercial recreation; finance, insurance, and real estate, and professional/personal services.

3.3 Land Use

3.3.1 Overview and Historic Perspective

As the Southern Pacific Railroad was established in the Antelope Valley, a stop was established in a central location for the loading of the agricultural products grown in the region. The activities induced the development of commercial uses and residents in close proximity. This location, near the current intersection of Lancaster Boulevard and the railroad, formed the nucleus for the Lancaster community.

Until the 1950s, Lancaster's development was largely isolated to this immediate area, in the section bounded by Avenue I, 10th Street West, Avenue J, and Division Street. Development of Sierra Highway as a major route parallel to the railroad, from Los Angeles to the north, reinforced the development of the area. Lancaster Boulevard and Sierra Highway emerged as the major commercial centers to serve the needs of nearby residents and the larger farming community. A number of small manufacturing, warehousing, and other industrial uses were located adjacent to the railroad to take advantage of its access. Residential units were constructed adjacent to these commercial and industrial activities.

Introduction of aircraft and aerospace employment opportunities at Edwards Air Force Base and Air Force Plant 42 after 1950 shifted the community focus away from the old downtown and the railroad. Residences and commercial uses expanded out from the core section at considerably lower densities. Between 1950 and 1960, residential uses expanded in the sections immediately east, west, and south. At the same time, commercial uses intensified along Sierra Highway and Lancaster Boulevard and were established along Avenue J and 10th Street West. Considerable transient-oriented development (motels, restaurants, service stations, etc.) occurred along Sierra Highway, as the route was heavily traveled by Los Angeles residents on their way to the ski and summer resorts of the Sierra.

Since the early 1960s, development has continued to expand outward from the original center of Lancaster. No longer dependent upon a singular focal point for employment and business, the community expanded in a sprawling, low density pattern. Primary growth was focused to the southwest, toward Quartz Hill, and east. Less development occurred in the northwest, due to its soil and

flooding problems, and almost none to the southeast. Commercial developments also scattered outward, along the major highways (e.g., Avenue I and Avenue K) and at major intersections. This diffusion lessened the viability of older uses in the downtown area and initiated a continuing problem of lessening sales and physical decline.

Construction of the Antelope Valley Freeway, California Highway 14, in the late 1960s and early 1970s shifted the heavy north-south intrastate travel away from Sierra Highway. As a result, new commercial uses are rapidly being developed along this corridor, particularly at the offramps, to take advantage of the visibility. Most proposed commercial developments now being considered or recently approved by the City are located in this area. This, coupled with the historic growth trend toward Quartz Hill, has shifted much of the focus of the City to the west. At the same time, significant residential expansion has continued in the east.

As the City expanded rapidly, little industrial development has taken place. Since most of the growth inducements have come from the aerospace employment opportunities outside of the City, there has been little incentive for local industrial expansion. As a consequence, the City of Lancaster is industry-poor relative to its resident population level.

Figure 3 illustrates the generalized growth pattern of the City and its vicinity.

3.3.2 Existing Land Use

The City of Lancaster is characterized by its low density, sprawling pattern of uses. The overall density of developed, non-rural, residential areas is three dwelling units per acre. This is in contrast with the County of Los Angeles average of seven dwelling units per acre. Large lots and residential tracts intermingled with vacant parcels account for this density. In the older community center (bounded generally by 15th Street West, Avenue H-8, Avenue K, and 10th Street East), there is some semblance of a cohesive and concentrated urban pattern. Outward from this development is fragmented, with residential tracts and commercial centers separated by large tracts of vacant land. Though the densities of a number of recent residential projects are higher than found historically in the community, the undeveloped intervening

Historic Growth of the City

parcels reduce their effective density. The existing land use pattern is depicted on Figure 4.

Commercial development is widely scattered throughout the City, along major arterials and in small centers near major intersections. No singular commercial activity center exists at the present time. Historically, the Lancaster Boulevard area was the focal point for the community's retail needs. Development of Sears, Gemco, K-Mart, and a number of other facilities in the Avenue K, Avenue J, and 15th Street West vicinity shifted most major retail activities to the west. Development of a Mervyn's Department Store and ancillary commercial establishments will further focus retail activities in this area. This competition will cause the further decline of Lancaster Boulevard, unless there is a change in the function and types of use in the area.

As intrastate travelers, the uses along Sierra Highway have seen a shift in their role. Motels which once catered to the traveler are now oriented to the businessman or professional who must visit nearby aerospace or other facilities. In the long-term, construction of new motels near the freeway will likely lessen their attractiveness. Other uses, such as restaurants and automobile dealerships are still found here, though there has been interest expressed by many to relocate near the freeway.

In continuous and scattered strips along many of the City's arterials and at major intersections are community convenience and transient-oriented retail uses. Food stores, fast-food restaurants, gasoline service stations, financial institutions, real estate offices, building materials and garden supplies, apparel and accessory stores, and other similar uses are found. These uses characterize development along Avenues I, J and K, 10th Street West, at street intersections, and near the freeway off-ramps.

Industrial uses are, generally, limited to the Sierra Highway corridor, adjacent to the Southern Pacific Railroad. Near the northwest corner of Air Force Plant 42, south of Avenue L-8 and east of Sierra Highway, a number of aircraft related industries have developed. In the area north of Avenue I and east of 10th Street East, zoned as "Desert", are a number of scattered moderate intensity industries (including a steel fabrication facility).

Figure 4

Legend

Existing Land Use

Residential

- Rural to very low density (1.0-3.2 du/ac)
- Low to medium density (3.3-15.0 du/ac
- Medium high density, including trailer parks (15.1-22.5 du/ac)

Other

- Commercial
- Industrial
- Public facilities including recreational

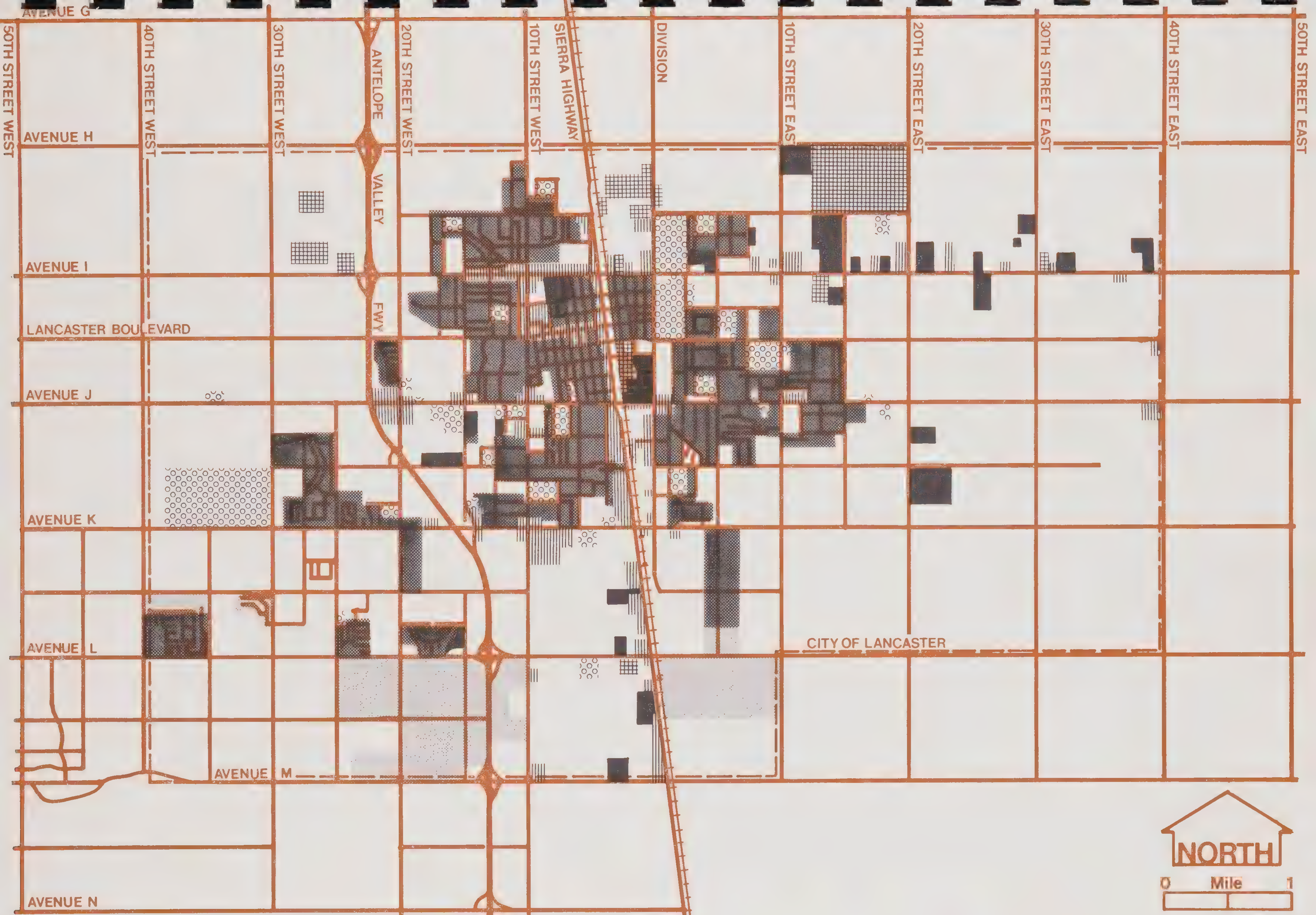

Figure 4

Existing Land Use

In the southwest portion of the City, at 30th Street West and Avenue K, is located Antelope Valley College. This is a two-year community college serving the greater Antelope Valley. A second facility of regional consequence, Antelope Valley Fairgrounds, is located at Division Street and Avenue I. It is the home of the annual Antelope Valley Fair and various festivals and exhibitions.

Few parks and recreation facilities are found in the City. Jane Reynolds Park, at Fern Avenue and Avenue J, is the only park of significance. Though it is only seven acres in size, the park functions as a community facility, with swimming pool, football field, softball diamond, basketball and volleyball courts, picnic tables, community building, and other similar uses. Currently under development is a major new community park south of Avenue K-8, between the Antelope Valley Freeway and 10th Street West. Other small parks are scattered throughout the City.

To the northwest of the City, in its planning area, is located Fox Field. Small, private and commercial aircraft operate at the facility. During forest fires in the nearby San Gabriel and Sierra Pelona Mountains, the facility is used as a base for water tanker flights. A number of small aircraft related commercials have located nearby. To the City's west, on Avenue I, between 60th and 50th Street West, the County of Los Angeles operates a minimum security detention facility, Mira Loma.

Of the City's 23,680 acres, an estimated 9,795, or 41 percent, are developed with urban uses , including 3,096 acres for highways and other rights-of-way. Of the 6,699 net urban acres, 5,382 (80.3 percent) are developed for residential, 672 (10 percent) for commercial, and 125 (1.8 percent) for industrial use. Public and institutional uses account for 6.4 percent of the net urban uses, or 427 acres. Approximately 53 percent of the City's area is undeveloped or occupied by very low density rural residential and other uses. The City's current land use distribution is depicted in Table 1.11.

3.3.3 Estimated Future Land Use Demand

Estimates of the future land use demand attributable to each of the four population and employment projections for the City of Lancaster have been prepared. These provide the foundation on which the City's land use policy map has been developed. The following summarizes the forecasts

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[1]Does not include rural residential units of less than three units per net acre.

TABLE 1.11

CITY OF LANCASTER
EXISTING LAND USE

Land Use	*1979 Estimated* Acreage*		*Percentage Total Land*	*Percentage Total Urban (excl. ROW)*
Residential	5,382			80.3
Low Density, Single Family		4,922		
Medium and High Density		65		
Mobile Homes		395		
Commercial	672			10.0
Industrial	123			1.8
Public, Institutional	427			6.4
Open Space and Recreation	95			1.4
TOTAL URBAN USE:	6,699		28.3	100.0
Right-of-Way	4,432		18.7	
Urban		3,096		
Rural		1,336		
Rural or Undeveloped	12,549		53.0	
TOTAL:	23,680		100.0	

*Envicom Corporation estimates derived from extrapolations of the 1976 land use inventory (automated data file) of Southern California Edison Company, prepared by Environmental Systems Research Institute.

for each major land use category:

a. Residential

As of January, 1979, there were 16,082 residential units in the City of Lancaster. Of these, 11,727 units (73 percent) were single family detached homes, and 4,355 units (27 percent) were apartments, condominimums, or mobile homes. An estimated 82.7 percent of the City's residents live in the single family units and 17.3 percent in the multiple units. The average density of single family and multiple unit developments was 3.0 and 9.5 dwellings per acre, respectively. Table 1.12 summarizes the distribution of existing dwelling units

As development of the City of Lancaster and nearby areas continues, it is anticipated that a greater segment of the market will be housed in multiple units. Escalation of land and construction costs, coupled with high rates of inflation, will raise housing prices and reduce the market for owner-occupied units. Already a problem in much of the United States, the full brunt of inflationary housing prices has yet to be experienced in the Lancaster area. It is estimated that the percentage of the population purchasing single family detached units will decrease from the current 82.7 percent to 72 percent by the year 2000. Conversely, the multiple unit share of the market will increase from the current 17.3 percent to 28 percent in the year 2000.

As the percentage of multiple units increases, residential densities will also increase. In recent years, the average lot size in the City has decreased from approximately 10,000 square feet to 7,500 square feet.[2] Continuing population growth will necessitate intensification to enable the efficient provision of costly urban services and reduce energy consumption. It is projected that the average single family unit development will increase from its three units per acre to seven units per acre by the year 2000. Similarly, multiple unit densities will rise from the current 9.5 units per acre to 16 units per acre.

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[2] City of Lancaster Planning Department.

TABLE 1.12

CITY OF LANCASTER
EXISTING HOUSING

Unit Type	*Number of Units*	*% Units*	*% Population*	*Net Acres*	*Density d.u./ac.*
Single Family	11,727	73	82.7	3,938	3.0
Apartments, condominiums, and mobile homes	4,355	27	17.3	460	9.5
TOTAL:	16,082	100	100.0		

Source: Envicom Corporation, Urban Futures City of Lancaster Housing Assistance Plan.

Table 1.13 summarizes the estimated additional dwelling units which will be required in the City of Lancaster for each of the four population forecasts (E-O and D-150, with and without PMD). Estimates are listed for single family and multiple units and their supporting acreage for each five-year time period and the cumulative 21-year planning horizon. Without the development of PMD, an additional 6,599 to 19,866 single family and 3,685 to 11,460 multiple units will be required. This will necessitate the development of 1,467 to 4,311 acres. Development of PMD will yield a demand of an additional 14,111 to 27,862 single family and 8,439 to 16,454 multiple units on a total of 2,968 to 5,926 acres. The total number of additional units without PMD will increase by 64 to 195 percent and with PMD will increase by 140 to 276 percent.

b. Commercial

Currently, an estimated 672 acres of the City of Lancaster are developed for commercial use. These consist of community and tourist oriented retail trade establishments (food stores, apparel and accessory stores, furniture and home furnishings stores, eating and drinking places, building materials and garden supplies, general merchandise stores, banks, savings and loan offices, insurance agencies, real estate offices, and wholesale trade facilities) and service establishments (hotels and motels, business services, auto repair, motion pictures, amusement and recreation services, health services, legal services, social services, and membership ogranizations). Generally, the City functions as the center of commerce for those residing in its corporate limits and surrounding rural areas, and transient businessmen and travelers. Very low densities in the outlying areas necessitate the travel of their residents to the City for most of their commercial and service needs.

Commercial uses are dispensed throughout the City, in isolated clusters or in continuous strips along major highways. No singular cluster of major establishments exists, though a concentration of larger establishments is emerging in the 15th Street West and Avenue K vicinity.

Future commercial development will occur to provide for the retail and service needs of the local population and those of the greater market area. It can

TABLE 1.13

CITY OF LANCASTER
ADDITIONAL DWELLING UNIT DEMAND (UNITS AND ACRES)

			Additional Dwelling Units Required									
		Net Increase (Each Time Period)	Single Family				Multi-Family				Total Units	
Year	Population		% Pop.	D.U. ([illegible] pers/d.u.)	D.U./Ac.	Additional Acreage	% Pop.	D.U. (2.8 pers/d.u.)	D.U./Ac.	Additional Acreage	D.U.	Acreage
1980	46,408	1,043	82	267	4	67	18	104	10	10	371	77
	46,408	1,043	82	267	4	67	18	104	10	10	371	77
	47,724	2,359	82	605	4	151	18	249	10	25	854	176
	47,724	2,359	82	605	4	151	18	249	10	25	854	176
1985	51,997	5,589	80	1,397	4.5	310	20	621	12	52	2,018	362
	51,997	5,58[illegible]	80	1,397	4.5	310	20	621	12	[illegible]	2,[illegible]18	362
	61,492	13,768	80	3,442	4.5	765	20	1,530	12	128	4,972	893
	61,492	13,768	80	3,442	4.5	765	20	1,530	12	128	4,[illegible]72	893
1990	58,258	6,261	78	1,526	5	305	22	765	14	[illegible]	2,291	360
	63,418	11,421	78	2,784	5	557	22	1,396	14	[illegible]	[illegible],130	667
	79,231	15,739	78	3,836	5	767	22	1,924	14	[illegible]	5,76[illegible]	904
	84,391	22,899	78	5,581	5	1,116	22	2,799	14	[illegible]	8,380	1,316
1995	65,273	7,000	75	1,641	6	274	25	972	15	[illegible]	2,613	339
	79,133	15,715	75	3,683	6	614	25	2,183	15	14[illegible]	5,866	760
	102,088	22,857	75	5,357	6	893	25	3,176	15	212	8,533	1,105
	115,948	31,557	75	7,396	6	1,233	25	4,383	15	292	11,779	1,525
2000	73,132	7,859	72	1,768	7	253	28	1,223	16	76	2,991	329
	105,712	26,579	72	5,[illegible]	7	854	28	4,135	16	253	10,115	1,112
	131,538	29,450	72	6,[illegible]26	7	947	28	4,581	16	286	11,207	1,233
	164,118	48,170	72	10,838	7	1,548	28	7,493	16	468	15,331	2,016
Net Increase		27,727		6,599		1,2[illegible]9		3,685		258	10,284	1,467
		60,347		14,111		2,402		8,439		566	22,55[illegible]	2,965
		86,173		19,866		3,523		11,460		788	31,326	4,311
		118,753		27,862		4,813		16,454		1,113	44,316	5,926
TOTAL (Year 2000):				18,326		6,131		8,040		718	23,366	6,849
				25,838		7,324		12,794		1,026	38,632	8,350
				31,[illegible]3		8,445		15,815		1,248	47,408	9,693
				39,589		9,735		20,[illegible]		1,57[illegible]	60,3[illegible]	11,308

Source: Envicom Corporation.

be assumed that the City will continue to attract residents of peripheral rural and low density areas for their commerce. To meet these needs, Lancaster will be in competition with the one other urban center within the general market area, the City of Palmdale.

In estimating Lancaster's future commercial demand, it is necessary to first identify the total demand which will be generated within the market area (for which both Lancaster and Palmdale will compete). Without development of PMD, it is projected that an additional 518 to 1,467 acres of commercial development will be required by the year 2000 (for the E-0 and D-150 population projections, respectively). This is based on the projection of a net increase of 10,353 to 29,344 employees[3] and an assumption that a density of 20 employees per acre will be realized by the year 2000. The latter represents an increase from the City's 1970[4] density of 7.1 commercial employees per acre and Palmdale's 12.6 employees per acre[5]. Intensification of employee densities is already occurring with the present and proposed construction of new commercial centers in the City (as exemplified by Von's and Mervyn's), which will be characterized by densities of 15 employees per acre. Development of PMD will result in a demand of 1,072 to 2,021 additional acres for commercial use in the market area, based on an estimated increase of 21,437 to 40,428 commercial employees by the year 2000. Table 1.14 summarizes the projected demand for additional commercial acreage for the market area.

Of the total commercial demand generated in the market area, the City of Lancaster will continue to provide for that necessary to support the needs of its residents and a percentage of the needs of residents of surrounding areas. Lancaster's corporate limits will contain approximately 48 percent of the market area's population and will provide neighborhood and community commercial development for their needs. Of the remaining area, the City of Palmdale will account for 25 percent of the population and resultant local and community commercial space. The smaller

[3]Refer to Section 3.2, Employment, Table 3.2.5.

[4]U.S. Census.

[5]By comparison, the County of Los Angeles averaged 30.9 commercial employees per acre in 1970.

TABLE 1.14

LANCASTER MARKET AREA[1]
ESTIMATED DEMAND FOR ADDITIONAL COMMERCIAL ACREAGE

Year		*Employees* *Total*	*Net Increase*	*Per Acre*	*Demand for Additional Acreage*
1978		12,000	NA	*	NA
2000	E-O w/o PMD	23,353	10,353	20	518
	E-O w/PMD	33,437	21,437	20	1,072
	D-150 w/o PMD	41,344	29,344	20	1,467
	D-150 w/ PMD	52,428	40,428	20	2,021

[1]Includes Lancaster, Palmdale, Quartz Hill, and surrounding areas.

[2]Includes retail trade; commercial recreation; finance, insurance, and real estate; and professional/personal services.

Source: Envicom Corporation

communities (Quartz Hill, Pearblossom, Littlerock, Llano, Lake Hughes-Elizabeth Lake, and other rural areas) will provide commercial development to meet local needs, but will have insufficient population to warrant community or regional scale establishments. It is estimated that, of the total demand generated by these areas, the City of Lancaster will attract 20 percent (or 10 percent of the total rural area and Palmdale commercial demand).

Based on these estimates, the City of Lancaster can be expected to experience a demand of 276 to 780 additional acres for commercial development by the year 2000, without the development of PMD. With the airport's development, a demand of 571 to 1,075 additional commercial acres is forecast. Projections of the demand for additional commercial acreage are summarized in Table 1.15.

Of the total demand for additional commercial development in the City of Lancaster, 79.3 to 245.9 acres will be required for neighborhood and community shopping needs, without the development of PMD. Its development would result in a demand for 172.4 to 339.8 additional acres. This represents approximately 30 percent of the total demand for additional commercial acreage. This category of use, primarily, includes retail trade establishments, food stores, drug stores, appliance stores, eating and drinking places, small department stores, and financial institutions. Service establishments, such as automobile service, office professional uses, real estate offices, entertainment facilities, and motels, are generally excluded. This is based on a standard of eight acres of development for each 4,000 residents for neighborhood uses and 30 acres for each 35,000 residents for community uses. Estimates of the demand for neighborhood and commercial development are summarized in Table 1.16.

Development of a major regional commercial center, usually containing two to three anchor department stores and 50 to 100 retail and service shops in a mall, requires a minimum supporting population of 150,000 in the market area. Review of the population forecasts for the entire Lancaster market area (Antelope Valley) indicates a potential demand for one to

TABLE 1.15

CITY OF LANCASTER
ESTIMATED DEMAND FOR ADDITIONAL COMMERCIAL ACREAGE

	Regional Demand--Net Incr.	*Lancaster*		*Other Market*				*Total Lancaster Commercial Demand*
		% Pop.	*Direct Incr. in Comm.*	*% Pop.*	*Incr. in Comm.*	*Potential Lanc. Capture**		
						%	*Ac.*	
E-O w/o PMD	518	48	249	52	269	10	27	276
E-O w/PMD	1,072	48	515	52	557	10	56	571
D-150 w/O PMD	1,467	48	704	52	763	10	76	780
D-150 w/PMD	2,021	48	970	52	1,051	10	105	1,075

Source: Envicom Corporation.

TABLE 1.16

CITY OF LANCASTER
ESTIMATED DEMAND FOR ADDITIONAL
NEIGHBORHOOD AND COMMUNITY COMMERCIAL

	Population-Net Increase	*Commercial Demand* Neighborhood 8 ac./4000 Acres	Community 30 ac./ 35,000 Acres	Total Neighborhood and Community
E-O w/o PMD	27,767	55.5	23.8	79.3
E-O w/PMD	60,347	120.7	51.7	172.4
D-150 w/o PMD	86,173	172	73.9	245.9
D-150 w/PMD	118,753	238	101.8	339.8

Source: Envicom Corporation.

two facilities for the year 2000[6]. In the former case, both Lancaster and Palmdale can be expected to compete for the same facility. Only one would be built, and, to be successful, the City of Lancaster will have to aggressively solicit potential developers. If two centers are developed, on realization of the higher population growth rates, it is likely that one will be developed in each community. Estimates of the demand for regional commercial development are summarized in Table 1.17.

Table 1.18 summarizes the net increase of each class of commercial land use which will be demanded in the City of Lancaster by the year 2000. "Other" commercial includes all service, wholesale trade, office professional, transient-oriented, finance, insurance, real estate, entertainment, recreation, and other related classes of use incorporated in the "neighborhood" and "community" categories. This represents approximately 50 percent of the net increase.

c. Industrial

As previously discussed, the City of Lancaster's 123 acres of industrial use is deficient if judged solely according to the criterion of sufficiency to meet the employment needs of its residents. Rather, it has been the development of high employee intensity, regionally oriented, facilities in surrounding areas which have provided employment for many of the City's residents (e.g., Lockheed Corporation, Edwards Air Force Base). Due to the unique nature of these industries, they have located at some distance from major centers of urban development to avoid potential incompatibilities and ensure the availability of sufficient acreage for their operational needs.

With development of PMD, a significant number of new employment opportunities will, again, be located outside the corporate limits of the City and its planning area. It cannot be expected, with or without the airport's development, that industrial development and its employment opportunities in the City will be commensurate with the needs of the residents. It will be incumbent upon the City to aggressively solicit the other classes of industrial development

[6]Section 3.2.4, Employment Forecast, Table 1.9.

TABLE 1.17

CITY OF LANCASTER
ESTIMATED DEMAND FOR REGIONAL COMMERCIAL

	Total Population	*Demand 100 Ac./150,000*
E-O w/o PMD	73,132	49*
E-O w/PMD	105,712	70*
D-150 w/o PMD	131,538	88
D-150 w/PMD	164,118	109

*At these levels, development of one regional commercial center of 100 acres will occur in Lancaster or Palmdale.

Source: Envicom Corporation.

TABLE 1.18

CITY OF LANCASTER
SUMMARY: YEAR 2000 DEMAND FOR COMMERCIAL LAND USE

Population Series	*Existing Acreage (All Classes)*	*2000 Demand, Net Increase*					*Total Commercial Use*
		Total	*Neigh.*	*Comm.*	*Reg.*	*Other*	
E-O w/o PMD	835	276	56	24	49	147	1,111
E-O w/PMD	835	571	121	52	70	328	1,406
D-150 w/o PMD	835	780	172	74	88	446	1,615
D-150 w/PMD	835	1,075	238	102	109	626	1,910

Source: Envicom Corporation.

which are not linked to or dependent on PMD and the aerospace industry.

As a consequence, in estimating the potential demand for additional industrial development in the City of Lancaster, it is necessary to, first, assess the demand of the greater Lancaster market area (including Palmdale, Quartz Hill, and surrounding communities). Without development of PMD, it is projected that an additional 644 to 1,615 acres of industrial development will be required by the year 2000 (for the E-O and D-150 population projections, respectively). This is based on the projection of a net increase of 6,436 to 16,153 industrial employees[7] and an assumption that a density of ten employees per acre will be realized by the year 2000. The latter represents approximately a 30 percent increase over 1970 employee per acre ratios[8]. Development of PMD will result in a demand of 787 to 1,759 additional acres, based on an estimated increase of 12,868 to 22,585 employees. Table 1.19 summarizes the projected demand for additional industrial acreage for the Lancaster market area.

Of the total industrial demand generated in the market area, the City of Lancaster could attract approximately 50 percent of industrial uses which would be generated without the development of PMD. Of the PMD generated industrial uses, it is estimated that the City could attract an estimated 15 percent of those not directly related to the operation of the airport. To achieve this capture rate, it will be necessary for the City to conduct an aggressive marketing program and consider the annexation of Fox Field as an additional attraction for industrial development.

Based on these estimates, the City of Lancaster can be expected to experience a demand of 322 to 808 additional acres for industrial development by the year 2000, without the development of PMD. An estimated 21 to 22 additional acres could be attracted by the City on development of PMD, resulting in a net increase of 343 to 830 industrial acres. Projections of the additional industrial land use development which will be demanded in the City are summarized in Table 1.20.

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[7] Refer to Section 3.2, Employment, Table 3.2.5.

[8] U.S. Census.

TABLE 1.19

LANCASTER MARKET AREA
ESTIMATED DEMAND FOR ADDITIONAL INDUSTRIAL ACREAGE

Population Series	*Existing Industrial Employees**	*2000 - Employees**			
		Total	*Net Increase*	*Per Acre*	*Net Increase Acres*
E-O w/o PMD	5,000	11,436	6,436	10	644
E-O w/PMD	5,000	12,868	7,869	10	787
D-150 w/o PMD	5,000	21,153	16,153	10	1,615
D-150 w/PMD	5,000	22,585	17,585	10	1,759

*Includes manufacturing, warehousing, fabrication and assembly, research and development, and wholesale trade; excludes PMD employees.

Source: Envicom Corporation.

TABLE 1.20

CITY OF LANCASTER
ESTIMATED DEMAND FOR ADDITIONAL INDUSTRIAL ACREAGE

		2000 Demand, Net Increase					
		Capture of Industry w/o PMD		Capture of PMD Generated Industry			
Population Series	Existing Acreage	%	Acres	%	Acres	Total	Total Industrial Acreage
E-O w/o PMD	185	50	322	NA	NA	322	507
E-O w/PMD	185	50	322	15	21	343	528
D-150 w/o PMD	185	50	808	NA	NA	808	993
D-150 w/PMD	185	50	808	15	22	830	1,015

Source: Envicom Corporation.

d. Public Uses

Public uses currently occupy an estimated 427 acres in the City of Lancaster. The majority of land is used for elementary, junior high, and senior high schools, Antelope Valley College, Antelope Valley Fairgrounds, and Antelope Valley Hospital. Generally, these are dispersed throughout the City to meet resident needs.

In the future, educational facilities will continue to account for the majority of land used for public purposes, other than recreation. It is estimated that a total of 360 to 660 acres will be required for elementary, junior high, and senior high schools in the year 2000 without the development of PMD (based on E-O and D-150 population projections, respectively). This will support 16 to 28 elementary and junior high schools, and three to six senior high schools. With development of the airport, a total of 545 to 845 acres will be required, supporting 23 to 35 elementary and junior high schools and five to eight senior high schools. This estimate is based on the continuance of the current rate of 16 percent of the population of elementary and junior high age and 8.5 percent of senior high age. It assumes an average of 750 students for each elementary and junior high school and 1,800 students for each senior high school. Table 1.21 summarizes the estimates of educational facility demand for the City for the year 2000.

Further, there will be demand for other educational facilities, such as expansion of Antelope Valley College, private schools, and adult educational facilities. Their magnitude cannot be estimated at this time, as there is no direct correlation between population size and their provision.

Police, fire, public administration, libraries, museums, social welfare, community meeting, hospitals, and other public facilities will continue to be developed to meet the needs of the residents. Most of these require little acreage and will not account for a significant percentage of the City's development by the year 2000. An estimated 20 to 37 acres will be required for these uses without development of PMD or 29 to 45 acres with development. This is based on a standard of 0.28 acres of public use development for each 1,000 residents. Table 1.22 summarizes the demand for public uses in the City of Lancaster in

TABLE 1.21

CITY OF LANCASTER
ESTIMATED DEMAND FOR EDUCATIONAL FACILITIES

		Educational Facility									
		Elementary and Junior High					*Senior High*				
		Students		*Facilities*			*Students*		*Facilities*		
Population Series	*Total Pop.*	*% Pop.*	*Total*	*Students/ Facil.*	*No. Req.*	*Acres (15/facil.)*	*% Pop.*	*Total*	*Students/ Facil.*	*No. Req.*	*Acres (40/facil.)*
E-O w/o PMD	73,132	16	11,701	750	16	240	8.5	6,216	1,800	3	120
E-O w/PMD	105,712	16	16,914	750	23	345	8.5	8,986	1,800	5	200
D-150 w/o PMD	131,538	16	21,046	750	28	420	8.5	11,180	1,800	6	240
D-150 w/PMD	164,118	16	26,259	750	35	525	8.5	13,950	1,800	8	320

Source: Envicom Corporation.

TABLE 1.22

CITY OF LANCASTER
ESTIMATED DEMAND FOR PUBLIC USES OTHER THAN EDUCATION

Population Series	*Total Population*	*Acres/ 1000 population*	*Acres*
E-O w/o PMD	73,132	0.28	20
E-O w/PMD	105,712	0.28	29
D-150 w/o PMD	131,538	0.28	37
D-150 w/PMD	164,118	0.28	45

Source: Envicom Corporation.

the year 2000.

In summation, it is estimated that the total acreage required for public uses, including those existing, in the year 2000 will be 565 to 882 acres without the development of PMD and 759 to 1,075 acres with PMD. This incorporates an estimated 185 acres currently used for specialized public purposes, e.g., Antelope Valley College, Antelope Valley Fairgrounds, and Antelope Valley Hospital. The total represents a 32 to 152 percent increase above existing levels. Introduction of other specialized public uses in the future (e.g., convention facility, four-year college) will be in addition to these estimates. Table 1.23 summarizes the demand for public uses in the City of Lancaster.

e. Parks and Recreation

Based on national, state, and local standards, the amount of land developed for park and recreation use in the City of Lancaster is well below that required[9]. Jane Reynolds is the only park offering a full range of community-oriented recreational uses. Others are developed for limited activities, including picnicing, softball, and other passive activities. According to the standards, the City's population requires an estimated 204 acres. Currently, 27 acres, exclusive of school playgrounds, are developed. Since the City is surrounded by vast open areas which are used for hiking, biking, horseback riding, and other recreational activities, Apollo Park is nearby, and school grounds are often used for recreational purposes, the 177 acre deficiency may be a slight exaggeration of the true unmet demand. Planned expansion of Rawley-Duntley Park, development of Tierra Bonita Park, and development of the Avenue K-8 and 12th Street West site will add significantly to the available recreation resource.

Based on the national standards, it is estimated that 329 to 592 acres of park and recreation use will be required to meet the needs of the residents in the City of Lancaster in the year 2000, without development of PMD. This includes 146 to 263 acres for neighborhood parks and 183 to 329 acres for community parks. With development of the airport, 474

[9] Saito/Sullivan Associates, Inc., Preliminary Master Plan for the City of Lancaster.

TABLE 1.23

CITY OF LANCASTER
SUMMARY: ESTIMATED DEMAND FOR PUBLIC USES

Population Series	*Education*	*Others*	*Total*	*Existing Special Use (Antelope Valley Col., Fairgrounds, etc.)*	*Total Public Acreage*
E-O w/o PMD	360	20	380	185	565
E-O w/PMD	545	29	574	185	759
D-150 w/o PMD	660	37	697	185	882
D-150 w/PMD	845	45	890	185	1,075

Source: Envicom Corporation.

to 738 acres of park and recration use will be necessitated. Of this, an estimated 211 to 328 acres will be required for neighborhood parks and 264 to 410 acres for community parks. Projected park and recreational demand is summarized in Table 1.24.

It should be noted that park and recreation demand can be met by several methods. Traditionally, neighborhood and community parks are carved out of residential communities and developed with athletic equipment and fields, swimming pools, picnic areas, barbeque pits, community buildings, and other similar facilities. Additionally, school playgrounds can be employed on a joint-use basis. Flood control channels can be used for hiking, equestrian activities, picnic and barbeque facilities, and other activities which do not require installation of permanent or flood-obstructing structures. In roadway and subdivision development, pedestrian and biking trails can be established. Each of these represents a potential recreational resource to the City.

f. Summary of Land Use Demand

By the year 2000, an additional 2,437 to 6,851 acres will be required for uban use without the development of PMD (excluding all locations for utility, roadway, and other rights-of-way). This represents a 39 to 110 percent increase above existing levels. With development of PMD, an additional 4,587 to 9,122 acres will be required for urban uses. Rural and undeveloped lands will be reduced by 21 to 63 percent without PMD or 42 to 85 percent with the airport. Reduction of the current 30 percent utilization of urban lands to a more efficient 15 to 20 percent will increase the resource of rural and vacant land by as much as 200 percent (on development of PMD, with the D-150 population projection). Estimates of the year 2000 land use demand for the City of Lancaster are summarized in Table 1.25.

TABLE 1.24

CITY OF LANCASTER
ESTIMATED PARK AND RECREATION DEMAND

Population Series	*Population*	*Neighborhood Park*		*Community Park*	
		*Acres/1000**	*Acres*	*Acres/1000**	*Acres*
E-O w/o PMD	73,132	2	146	2.5	183
E-O w/PMD	105,712	2	211	2.5	264
D-150 w/o PMD	131,538	2	263	2.5	329
D-150 w/PMD	164,118	2	328	2.5	410

*Source: Saito-Sullivan Associates, Inc.

TABLE 1.25

SUMMARY: ESTIMATED YEAR 2000 LAND USE

Population Series	Existing 1979 Acres[1]	*Projected Year 2000 Demand Population Series* E-O w/o PMD Net Increase	E-O w/o PMD Total	E-O w/PMD Net Increase	E-O w/PMD Total	D-150 w/o PMD Net Increase	D-150 w/o PMD Total	D-150 w/PMD Net Increase	D-150 w/PMD Total
Residential	5,382	1,467	6,849	2,968	8,350	4,311	9,693	5,926	11,308
Single-Family[2]	4,922	1,209	6,131	2,402	7,324	3,523	8,445	4,813	9,735
Multiple[3]	460	258	718	566	1,026	788	1,248	1,113	1,573
Commercial	672	276	948	571	1,243	780	1,452	1,075	1,740
Neighborhood[4]		56		121		172		238	N.A.
Community[4]		24		52		74		102	
Regional[4]		49		70		88		109	
Other[4]		147		328		446		626	
Industrial	123	322	445	343	466	808	931	830	953
Public	427	138	565	332	759	455	882	648	1,075
Parks	95	234	329	380	475	497	592	643	738
TOTAL URBAN USE:	6,699	2,437	9,136	4,587	11,286	6,851	13,550	9,122	15,821
Right-of-Way									
Urban	3,096	672	3,768	1,521	5,076	2,337	5,522	3,320	6,310
Rural	1,336	(224)	992	(507)	829	(809)	349	(1,106)	18
Rural or Undeveloped	12,549	(2,765)	9,784	(5,455)	7,094	(8,240)	4,309	(11,115)	1,434
TOTAL:	23,680	-	23,680	-	23,680	-	23,680	-	23,680

[1] Southern California Edison Company land use inventory and Envicom Corporation estimates.
[2] Does not include residential of less than 3.0 units/acre.
[3] Includes mobile homes and mobile home parks.
[4] Estimates of existing use by this category are not available.

Source: Envicom Corporation.

3.4 Santiation Systems

Development of urban classes of use in the City of Lancaster will be dependent upon the availability of sanitation treatment for the wastes which are generated. Most of the City is located within the County of Los Angeles Sanitation District 14. Its service area and districts are depicted in Figure 5. Only small, undeveloped areas on the periphery of the City, fall outside the district. These include the areas bounded by: (1) 30th Street West, Avenue J, 40th Street West, and Avenue H; (2) 20th Street East, Avenue I (in an irregular pattern), 40th Street East, and Aveue H; and (3) Avenue L, 20th Street West, Avenue M, and 10th Street East.

Major trunk lines are found throughout the City. Many of these have considerable excess capacity, in particular those in the western and eastern portions of the City. These include 30th Street West, 40th Street West, Avenue I, and Avenue J in the west, and 15th Street East, Avenue I, and Avenue J in the east.

Located at 20th Street West and between Avenue C and Avenue D, the sanitation plant currently processes 4.0 million gallons a day (mgd)[1] attributable to an estimated service population of 40,000. The existing facility has a capacity of 4.5 mgd, which it will reach at a service population of approximately 50,000. Plans have been filed which would increase the plant's capacity by 2 mgd serving an additional 20,000 persons. Further, the Sanitation District in its master plan projects an ultimate capacity of 13.5 mgd, or service for approximately 135,000 persons.

Since the Sanitation District also serves residents of the Quartz Hill area, the planned capacity of the sanitation facility would be sufficient to serve the needs of the City of Lancaster only if the population and urban development attributable to the series E-O forecast, with or without the development of PMD, is realized (73,132 and 105,712 residents, respectively). Population growth and urban development at the higher D-150 level (131,538 residents without PMD and 164,118 with PMD) would necessitate expansion beyond the planned capacity.

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[1]City of Lancaster Department of Engineering.

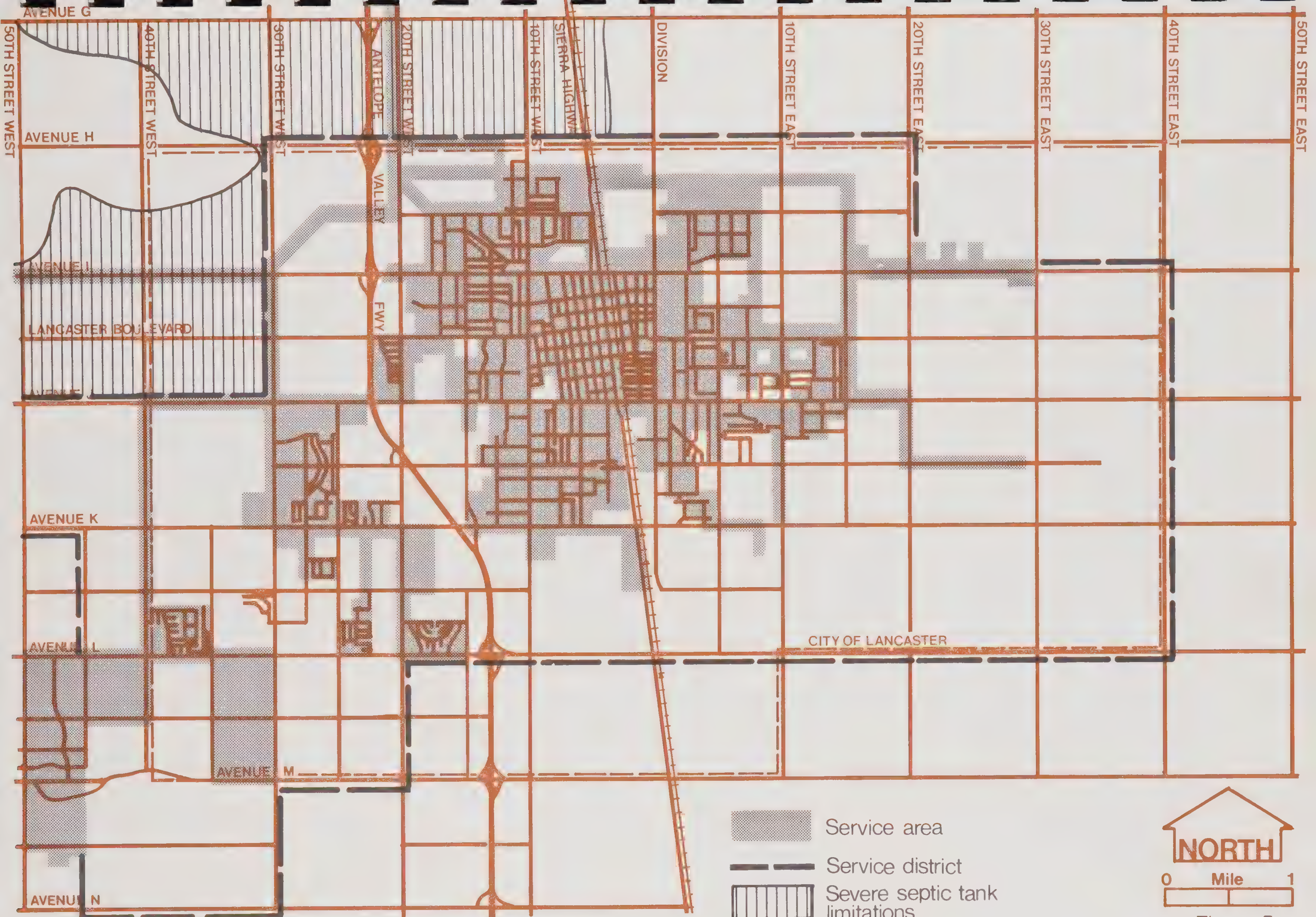


Figure 5

Sanitation Service

Present standards of the Lahontan Water Quality Control Board suggest that only one treatment facility be utilized for the portion of the Antelope Valley within Los Angeles County. It is most likely that the District 14 treatment plant would be utilized for such purposes. If this were to occur, the facility serving District 20 (the Palmdale area) would be closed, linkages established to the Avenue D facility, and that facility further expanded to accommodate the additional demand.

3.5 Septic Tank Limitations

In non-sewered areas, rural classes of development can proceed provided the generated human wastes can be adequately percolated through the soil. The ability to install septic tanks is based, generally, on the following criteria: (1) type and depth of soils (density of grain, permeability, structure, etc.); (2) depth of groundwater; (3) topography; and (4) slope. It is the cumulative effect of these factors which will determine whether septic tanks can be effectively installed. Where limitations exist, the septic treatment cycle cannot function, resulting in groundwater pollution, surface ponding, and other health hazards.

Much of the northwestern area of the City is characterized by soils with severe limitations for the construction and use of septic tanks. Of this area, the portion bounded by 30th Street West, Avenue H, 40th Street West, and Avenue J is outside County Sanitation District 14. Development in this area will necessitate annexation to the District on approval of the use of self-contained disposal systems, not currently permitted by the County. Also outside of the District, the area encompassed by Avenue H, 20th Street East, and Avenue I has soils which exhibit a "moderate" limitation for septic tanks. Normally, engineering design can overcome the problems in such areas.

Figure 6 illustrates the septic tank limitations in the City of Lancaster.

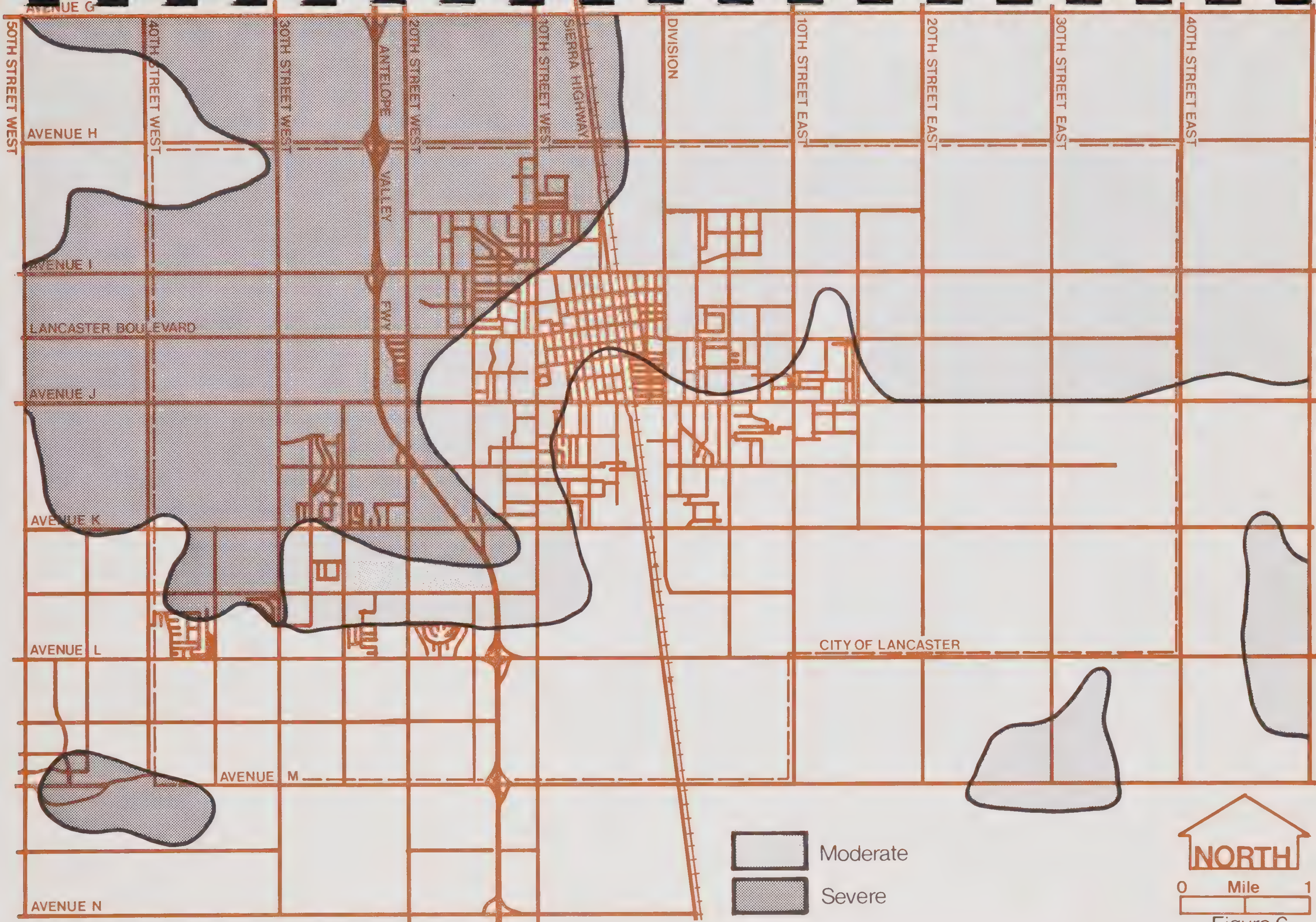


Figure 6

Septic Tank Limitations

3.6 Water Supply

Most of the City of Lancaster is located within and receives service from a water district. Those areas which are outside the districts are, for the most part, undeveloped. The few houses within these areas rely upon their own wells to access the groundwater reservoir. Figure 7 illustrates the service areas and major facilities of the water districts.

In the served areas, Lancaster Annex No. 4 provides water to all but the extreme southwest portion of the City. Water in this area is provided by the County-Quartz Hill Water District. Crisscrossing the served areas is a regular grid of distribution pipes exceeding ten inches.

Approximately 60 percent of the water supply is supplied from domestic wells located within and near the City (as depicted on Figure 7). A water treatment facility is not maintained, as the well water is sufficiently free of total dissolved solids.

Urbanization and agricultural activities have incurred a serious overdrought and lowering of the groundwater reservoir. To compensate, a major feeder has been constructed along Avenue N by the Antelope Valley-East Kern Water Agency to provide imported water from the Feather River This source now accounts for approximately 40 percent of the City's water, and its service will increase as further urbanization occurs.

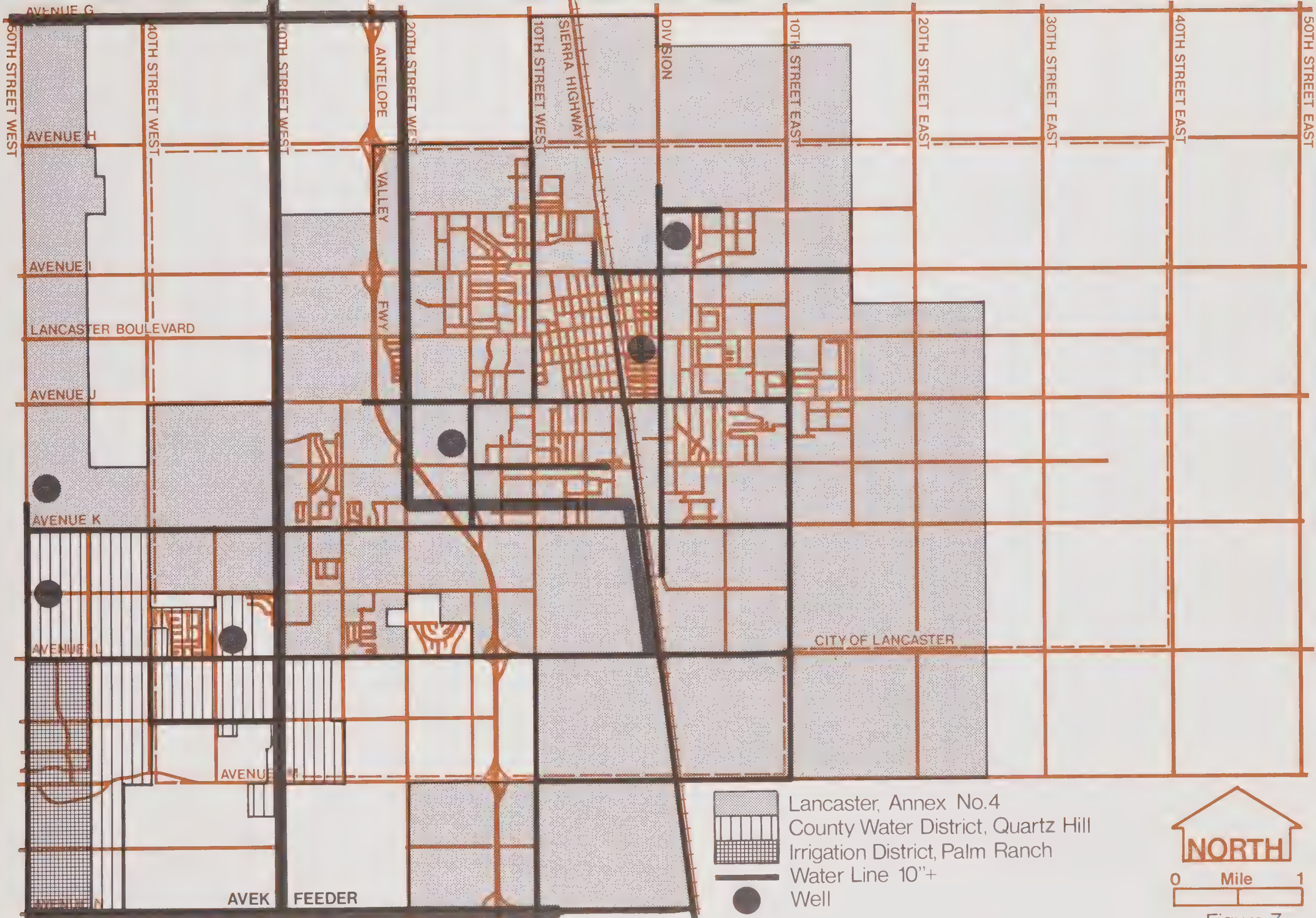


Figure 7

Water Supply

3.7 Circulation

Overlaying the City of Lancaster is a regular grid of arterials and secondary highways. The arterials are located on the section lines at one-mile intervals and the secondaries at the intervening half mile. Lancaster Boulevard and Sierra Highway are the principal exceptions. The latter parallels the route of the Southern Pacific Railroad through the Valley, and the former is perpendicular to the railroad, originally established as the City's main street.

Most of the arterial-secondary grid is operating well below capacity. In some of the peripheral areas, paved highways currently serve little more than jackrabbits. In the older central portions of the community, a number of roadways are operating near capacity during peak hours. Congestion often occurs on Avenue I, Avenue J, Lancaster Boulevard, 10th Street West, and 15th Street West.

There are no grade separated crossings of the City's east-west highways and Southern Pacific Railroad tracks. Heavy traffic volumes and numerous train movements often seriously congest travel, particularly on Avenue I and Avenue J.

Excess capacity of the existing and planned regular grid network, the arterials having a 100-foot right-of-way and the secondaries an 80-foot right-of-way, will support considerable additional development. The uniformity of the grid, however, is not reflective of the variable densities which have and will continue to develop in the City. In areas such as 15th Street West, it will be necessary to upgrade highway classifications to accommodate the traffic generated by the more intensive land use pattern. Highways in other, less dense and more rural areas can be lessened in their scale as the land use pattern may never dictate heavy use.

Intercity and interstate traffic is accommodated by the Antelope Valley Freeway, California State Highway 14. This is a major route from the Los Angeles Basin to the Sierra and eastern Sierra areas, and provides easy access for Lancaster residents to Los Angeles. It varies between four and six lanes and operates well below its capacity.

The existing paved highway network is illustrated in Figure 8.

Figure 8

Circulation System

3.8 Existing Zoning

The zoning pattern of the City of Lancaster is typical of communities which are isolated and not contiguous with other urban areas. It is typified by a core of dense commercial and residential uses surrounded by rings of decreasing density. Coincident with the historic area of development, this core is defined by Avenue H-8, 15th Street West, 5th Street East, and Avenue J-8. Herein, commercial uses are located along the principal highways adjacent to which are areas designated for multiple units (R-2 and R-3) and infill areas for single family units (R-D). Bisecting the core from the north to south, adjacent to the Southern Pacific Railroad is a corridor of variable width in which land is zoned for commercial and manufacturing use. Surrounding the core is a large area designated for single family residences (R-A). This pattern is broken by scattered corridors and clusters of commercial (e.g. along Avenue J and Avenue K, along Avenue K) and high residential densities (e.g. 1st Street West). These result from the recent shift of economic activity, to the west attracted by the completion of the Antelope Valley Freeway. Further on the periphery there is considerable variability in type and density of use, reflecting the tendency to "leapfrog" vacant parcels and land sold for the purpose of speculation.

Of the City's land area, 42 percent (9,204 acres) is zoned for residential development. Ninety-four percent of this land is allocated for single family residences (R-A and R-1) and the remaining 6 percent for multiples. Four percent of the area (892 acres) is zoned for commercial and 8 percent (1,721 acres) for manufacturing. The remaining 46 percent (10,053 acres) is zoned for agriculture ("A") and general rural uses ("D"). Table 1.26 summarizes the existing zoning in the City and Figure 9 illustrates its distribution.

TABLE 1.26

EXISTING ZONING

Classification	Average		Percentage	
	Total	*Sub-Total*	*Total*	*Sub-Total*
D	4,491		20.5	
A	5,562		25.4	
R	9,204		42.0	
RA/R1		8,654		39.6
R2		224		1.0
R3		178		0.8
RPD		128		0.6
C	892			
C		727		3.5
CPD		130		0.6
CM		35		0.2
M	1,721			

Source: Envicom Corporation, City of Lancaster

Figure 9

Legend

Existing Zoning

A1 and A2

RA

R1

R2

R3

C1, C2, C3, C4, CR

M1 1/2, M2-ME

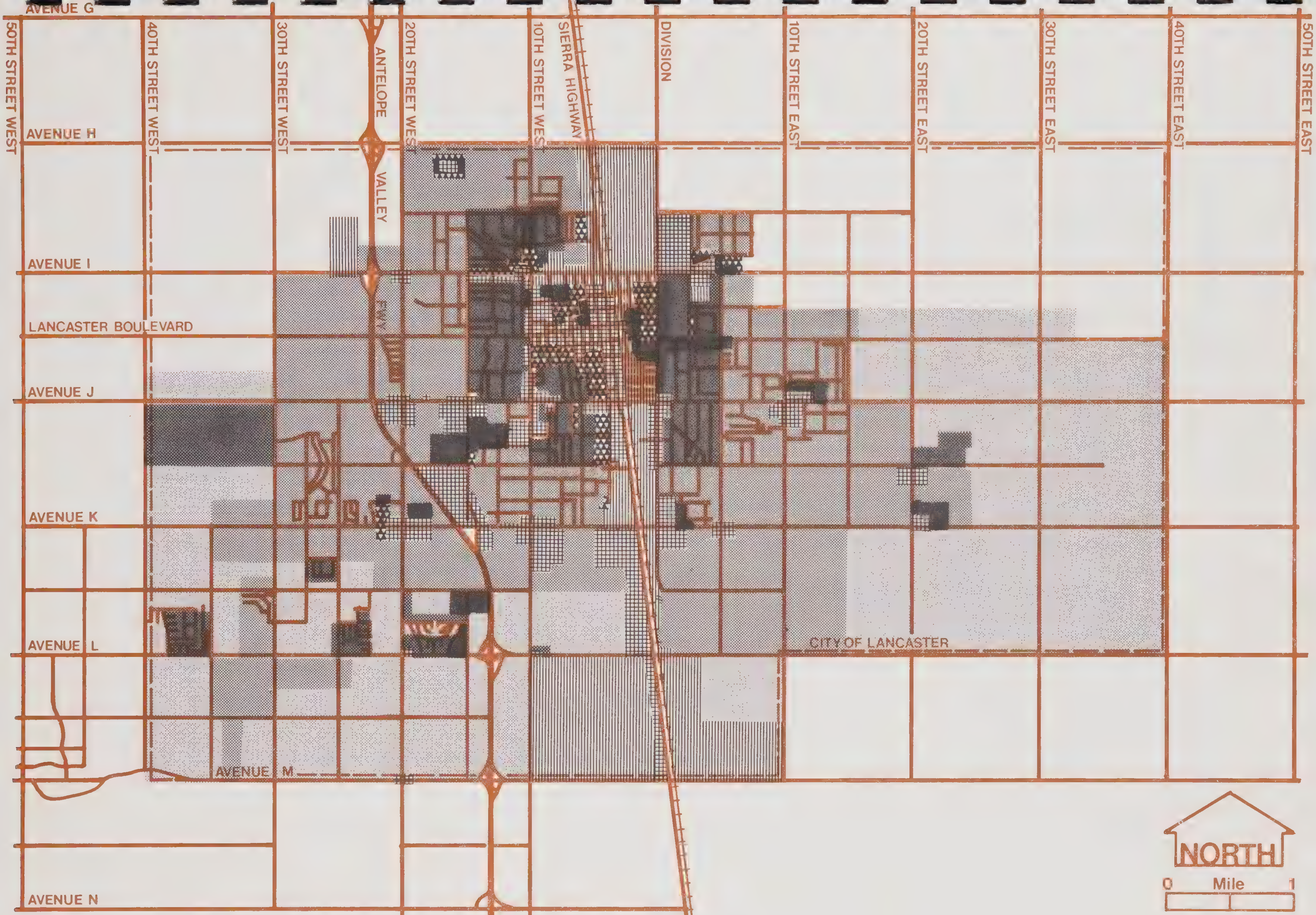


Figure 9

Existing Zoning

3.9 Land Fragmentation

In general, vacant land in the City of Lancaster comprises numerous small parcels owned by many different individuals. Years of land speculation and periodic reselling of properties has been accompanied by subdivision and lot splits. Few parcels contiguous with and in proximity to developed parcels are in excess of 20 acres. Generally, the large parcels are on the city's periphery. The fragmentation has severely hindered the assembly of parcels into suitable development sizes for most residential and moderate to large scale commercial uses. Consequently, those uses requiring large areas have "leapfrogged" to areas peripheral to existing developments.

3.10 Noise

Major sources of noise within the urban area of the City of Lancaster are vehicular traffic, aircraft operations, and railroad operations. In certain areas, noise from industrial operations is also significant. Throughout most of the non-urbanized areas of the City and its planning area, the absence of major noise sources results in an environment typical of most urban and rural areas.

Currently, an estimated 13.6 percent of the City's residents are exposed to high levels of noise, exceeding an L_{dn} of 65 dB(A). On the other hand, 71.2 percent are exposed to very low levels below an L_{dn} of 60 dB(A). Major noise conflict areas are found along (1) Sierra Highway and Southern Pacific Railroad; (2) in the southern portion of the City, between Avenues K and L, due to the operations of Air Force Plant 42; (3) along the Antelope Valley Freeways; and (4) along segments of 10th Street West, 10th Street East, Avenue I, Avenue J, and Avenue K (refer to the existing noise map in the rear pocket of this document).

Though automobile traffic may triple in the future, technological advances and federal and state noise reduction regulations will result in little overall change in noise impacts. An estimated 13.1 percent of the population would experience noise levels of in excess of L_{dn} of 67 dB(A), while 70.8 percent would experience levels of less than an L_{dn} 60 dB(A). Those areas which currently significantly impacted will continue to be of concern in the future.

Areas subject to high noise levels should be carefully evaluated as to the appropriate types of use which should be located therein. Measures to lessen noise exposure and mitigate the potential impacts (e.g. earthen berms, construction of walls, insulation) should be considered.

3.11 Flooding/Hydrology

The Army Corps of Engineers has designated large areas within the corporate limits of the City and its planning area as "floodprone areas". Within these, federal flood insurance programs dictate that for development to occur, the mean grade level of the building site must be raised one foot above the "design flood" and that this cannot raise the flood level on adjacent properties.

Flooding in the City and planning area is attributable largely to the runoff from the San Gabriel and Sierra Pelona Mountains in the south. In the City it is largely street flooding of low velocity, as the concentrated flows emanating from the mountain canyons has spread and dissipated across the desert floor. In some areas the water will pond due to the slight gradient and impervious soils. Three major drainage courses impact the City (refer to Figure 10), including:

a. Amargosa Creek. Collecting runoff from the northern face of the Sierra Pelona Mountains, this creek enters the City in the vicinity of 5th Street West and Avenue M. Generally, it proceeds to the northwest parallel and adjacent to the Antelope Valley Freeway. In the north, the creek drains into Lake Lancaster, at Avenue H and 20th Street West.

b. Anaverde Creek. Also collecting runoff from the Sierra Pelona Mountains, this creek flows northerly into Air Force Plant 42, where it is collected in the Lockheed drainage channel and held in the Air Force retention basin. Overflow from the basin would flow north and enter the City due east of Sierra Highway and Avenue M. From here, it would travel north in a corridor east and parallel to Sierra Highway.

c. Drainage of Neenach, Fairmont, and Mira Loma Washes. Runoff from the western end of the Sierra Pelona Mountains flows into Neenach, Fairmont, and Mira Loma Washes. Their flow crosses the western Antelope Valley, combining into a single drainage course and enters the City at 40th Street West, between Avenue H and Avenue J. From here it extends east to the Antelope Valley Freeway.

Figure 10

Flood Hazard

3.12 Wildlife, Vegetation, and Cultural Resources

The areas west, north, and northeast of the City and planning area are characterized as typical desert vegetative and wildlife habitats. Most common of the vegetative species is the Shadscale Scrub (Figure 11). This species flourishes on the hard pan alkaline soils of the Mojave Desert. It is susceptible to subdivision, very susceptible to vehicular traffic, and easily overgrazed by livestock. Rejuvenation of this and other desert habitats require 25 to 50 years. In general, this species is common and is not considered rare or endangered. Urban expansion into its habitat will permanently disrupt the species. However, since it is so expansive and not considered scarce, such action will have little overall impact. Concentrations of Joshua Trees occur in the south and southwest. Though it is not considered a rare and endangered vegetative species , it is unique to the Mojave Desert in the United States. It is an extremely fragile plant; if replanted, it must be oriented in exactly the same direction as it was originally growing. It is easily destroyed by off-road vehicles, fires, and tree cutting. Though the areas noted on the map are relatively intact, as urban and agricultural development occur, its continued existence will reach the critical level.

Desert flowers symbolize to many people the desert region. Each spring much of the flatlands of the area are carpeted by an outstanding variety of wildflowers. Their blooming attracts tourists from the Los Angeles basin by the thousands. To the west of Air Force Plant 42, one particular area stands out for its variety and density of blooms. Like the Joshua Tree, the desert flower is an extremely fragile species. Each year, paths are visible where the hibernating seed has been disrupted by off-road vehicles. Uncontrolled urbanization would threaten this yearly attraction.

Two plant species in the City have been identified as candidate rare and endangered species. These include the Alkalai mariposa, west of 10th Street East between Avenues I and H and Land Pl., and Mojave spineflower, west of 10th Street East between Avenues L and M.

Though wildlife may not traditionally be associated with desert environments, it is abundant and extremely fragile. Sensitive desert species have moved outward from the developed portions of the Valley, to the east of Little Rock Creek, to the north of the metropolitan Lancaster area, and into the Sierra Pelona and San Gabriel Mountains. Such species as the

Desert Tortoise, Golden Eagle, and Desert Squirrel are extremely rare and use these areas as their habitat.

In the immediate City area there is one wildlife habitat of concern. To the west, north, and east of the present urban area is the habitat of the Prairie Falcon, classified as a rare species, and the Collared Lizard, a species protected by state law. Urban expansion into these areas must be integrated into the native habitat as carefully as possible.

Archaeologists consider much of the Antelope Valley as sensitive. Indian tribes moved across the floor of the Valley, leaving behind many artifacts of historical significance. No one area can be identified as more significant than another. Remains of past civilizations are likely to be found in most any area. As development occurs, caution should be exercised during the process of excavation and if artifacts are found, they should be reported to local archaeological societies.

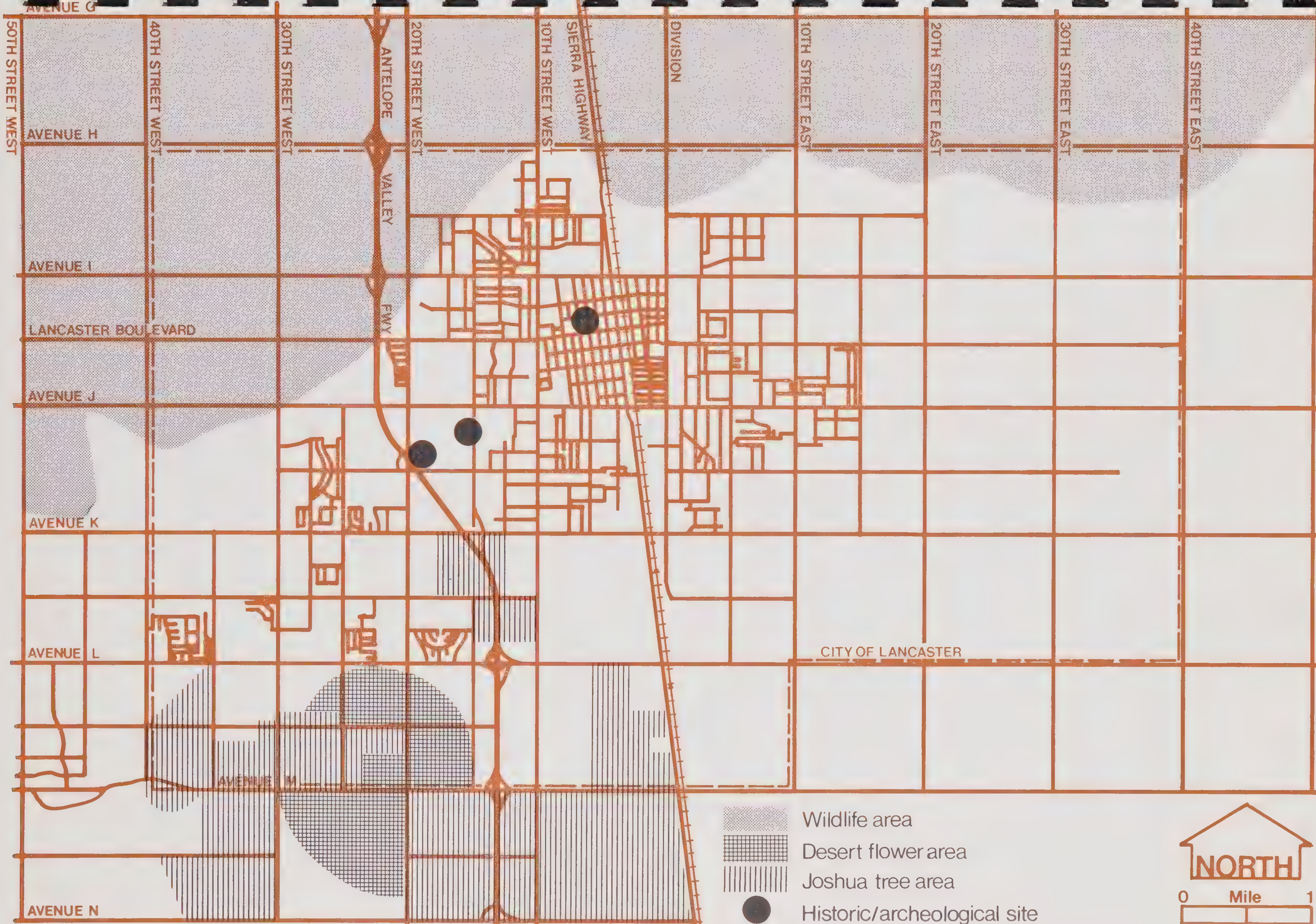


Figure 11

Wildlife and Vegetation

4.0 Land Use Issues

Each of the factors discussed in the preceeding section affect the manner in which land will be used in the future in the City of Lancaster. Some represent opportunities which will facilitate development (e.g., sewage systems with excess capacity, new employment and population growth), while others act as constraints or hazards to development (e.g., flooding, congested roadways). For each of these, it is necessary for the City to establish a well-defined set of goals and policies which will act as the guidelines by which future development will be managed. The issues that are posed by these systems in shaping the future use of land include:

4.1 Accommodation of Population and Concomitant Urban Developments

It is forecast that an additional 27,767 to 118,753 individuals will reside in the City of Lancaster in the year 2000, an increase of 61 to 262 percent. This would be accompanied by equivalent increases in residential, commercial, industrial, and public land use development required to support this population. At issue is the appropriateness of and the extent to which the City should allocate its economic and physical resources to accommodate these demands. Among the considerations which must be weighed are:

a. availability of sufficient developable land to provide for demands;

b. availability of sufficient infrastructural services (water, sewer, solid waste, energy, communications, etc.);

c. availability of sufficient public service systems (police, fire, social and cultural, administrative);

d. sufficiency of revenue generated by new development to compensate for the costs incurred;

e. capacity of natural environmental systems, in particular the airshed;

f. compatibility of new development with existing developments;

g. compatibility with existing life styles of the residents;

h. public acceptability; and

i. maintenance of the quality of life.

In general, it can be concluded that the City of Lancaster has sufficient existing or planned systems to accommodate projected demand. Questions of lifestyle need to be addressed as development proceeds.

4.2 Pattern of Land Use Development

Land use development can be (1) widely spread at very low densities across vast areas, (2) concentrated at medium and high densities in a relatively small area, or (3) located in adjacent variable density clusters, each characterized by its own identity. A "dispersed" pattern of development, the first option, normally incurs significant adverse long-term economic, environmental, and social costs. An extensive road network must be constructed, requiring lengthy travel from home to employment, shopping, and recreation and concomitantly high levels of air and noise pollution and wasteful energy consumption. There is little imageability to the community, as the area is characterized by its uniform low densities and "sameness". On the other hand, a "concentrated" pattern can significantly reduce the costs for highways and other public service systems, deemphasize the use of the automobile, improve air quality, lessen noise, and heighten imageability. However, a very dense pattern could significantly alter the present character of the City and its lifestyle. A compromise pattern of development, one which clusters variable densities, would afford the opportunity to attain some of the benefits of concentrated development (e.g., reduced auto travel), while maintaining the opportunity for existing lifestyles.

4.3 Capacity of the Plan

It is the intent of the Land Use Element of the General Plan to be an effective guide for the future growth and management of the scarce resources of the City. It is to be used by those responsible for the provision of urban services (e.g., utilities, roadways, sewers, water) as one of the primary bases on which formal capital improvement programs for the construction of facilities and administrative programs are established. As a consequence, it must be creditable in its projections of demand and land use. An overly optimistic plan could result in an overbuilding of systems which could not be adequately financed by the City's residents. A too-conservative plan, on the other hand, could result in a deficiency of systems to meet public requirements. To this end, the Southern California Association of Governments has recommended that a land use plan allocate sufficient land to meet demands for a 20 year period (a one to one ratio of supply and demand). If excess capacity is depicted, mechanisms need to be established to prioritize development areas.

4.4 Environmental Constraints

Areas of the City are subject to flooding, liquefaction, limitations on septic tank development, expansive soils, brush fire, and other hazards. For development to proceed, most of these problems can be ameliorated through normal engineering design. In some cases, extraordinary measures must be expended (e.g., site grading to an elevation one foot above the "design flood"). Future development in the City must respond to these constraints.

4.5 Environmental Sensitivities

Land, air, water, vegetation, and wildlife are all scarce commodities. Located in the City are the rare and endangered Alkalai mariposa and Mojave spineflower. These, as well as the relatively unique Joshua tree, desert woodland, and desert wildflowers are sensitive to and could be adversely impacted by the intrusion of development. Major vegetative communities are located in the southwest of the City and adjacent to 10th Street East, north of Avenue H-8.

4.6 Land Parcelization

Numerous small parcels in the core of the City will hinder the development of most residential and moderate to large scale commercial developments. These uses will continue to leapfrog unless adequate assembly mechanisms are established or economic conditions warrant.

4.7 Land Use Compatibility

Adjacency of dissimilar land uses and functions, location of noise-sensitive uses in areas of high exposure, and siting of major sources of air pollutants can result in adverse problems of land use incompatibility. At these interfaces, long-term physical deterioration, economic loss, and health hazards result. In future developments, the City must carefully guide the interface of dissimilar or conflicting uses.

4.8 Public Services

As population growth and urban development proceeds, at issue is the ability to provide sufficient public services to and within easy access of the City's residents. A prime determinant is the cost of providing service and the ability to obtain revenue to cover these costs. Since the passage of Proposition 13, the broad latitude of service agencies to levy taxes has disappeared. Continuance and expansion of services will occur at a considerably reduced rate unless there is a sufficient revenue base from which to draw. To this end, the City must encourage the attraction of major revenue generating uses, such as commercial and industrial.

4.9 Redevelopment

Commercial and residential uses in the older core of the community have been declining during the last decade. The residences have deteriorated due to the combination of age, inadequate maintenance, low structural value, and re-sale at low prices. Commercial areas have been influenced by a dislocation of patrons to other centralized and more attractive establishments, inadequate parking, congestion on Lancaster Boulevard, inadequate maintenance, and frequent turnover of owners. Of particular concern are:

a. the area bounded by Avenue I, 10th Street West, Division Street, and Avenue J;

b. all areas within 400 feet of the centerline of the Southern Pacific Railroad line; and

c. the area north of Avenue I, between Sierra Highway and Division Street.

4.10 General Plan Implementation

The General Plan can be either an effective mechanism in guiding the future development and management of the City's resources or it can be disregarded as a necessary inconvenience. If it is actively and persuasively used it can yield an environment of properly managed resources, compatible and complementary land uses, and minimal economic wastefulness. On the other hand, its disregard could incur significant land use and environmental incompatibilities, economic expenditures for underutilized or not-required services and systems, and environmental degradation.

4.11 Expansion of the City's Corporate Limits

A city's corporate limits usually are arbitrary boundaries which bear little resemblance to its zone of influence or market for services. Most of Lancaster's residents are employed outside of the City and many non-residents use the City's services. In theory, the City's jurisdictional boundary should encompass the employment centers which are in proximity to its residents (e.g., Air Force Plant 42) and its service population. Previously defined corporate limits of the City of Palmdale preclude some of these opportunities. However, other areas, such as Fox Field and its potential as an employment center for Lancaster residents, still afford the opportunity for inclusion within the City's boundaries.

4.12 Character of Commercial Development

Commercial development in the City of Lancaster is located in (1) shallow linear strips, usually one business deep, along major thoroughfares, and (2) clusters of a number of establishments linked to the major thoroughfares. Generally, the former dominates the cityscape and is found along Avenue I, Lancaster Boulevard, Avenue J, Avenue K, 10th Street West, Sierra Highway, and segments of Division Street. Most recent commercial developments have clustered into multi-tenant centers. The new Von's Center at 20th Street West and Avenue J and Antelope Valley Center (Mervyn's, Longs Drug Stores, etc.) exemplify this trend. This shift to clustered development recognizes the inherent long-term economic and environmental problems associated with "strip" development. Heavy traffic on thoroughfares, poor accessibility, the inability of a customer to make more than limited purchases at a single stop, and general unattractiveness act to inhibit patronage of "strip" developments when clustered alternatives are available. Historically, "strip" commercial economically and physically deteriorates when clustered competition is introduced, and becomes a serious problem of blight.

4.13 Community Design

Generally, the City of Lancaster is characterized by its sprawling, low density residential developments, some with extensive landscaping, overhead utility lines, abundant signage, poor streetscape, extensive asphalt and concrete paving, vacant lots covered with debris, lack of identifiable focal points, and poorly maintained industrial and commercial yards. Many recent developments have attempted to improve the visual environment through extensive landscaping and greater attention to design detail in new structures. Continued sensitivity to this issue is crucial in developing a positive image for the City.

4.14 Cost of Urban Services

Every resident of the City is affected directly or indirectly by the costs of providing infrastructural (water, sewer, energy, communications, roadways, flood control, solid waste) and socio-cultural (museums, libraries, recreation, senior citizens) services. Recent tax initiatives (Propositions 12 and 4) have limited the revenue available and the ability of the City to provide these services. Of concern is the assumption of responsibility to provide services to meet future demands.

5.0 Land Use Plan

The Land Use Plan for the City of Lancaster consists of the (1) goals, objectives, and policies directed at the resolution of land use development and resource management uses (as cited in the previous section), (2) maps depicting the policy for the distribution and density of uses in the City and its planning area, (3) classifications of uses to be accommodated in the City by policy and standards for development, and (4) programs for the implementation of the plan policies.

5.1 Land Use Goal

It shall be the goal of the City of Lancaster to manage the use of its land so that development occurs in an orderly and beneficial manner which recognizes and is sensitive to opportunities and constraints imposed by the City's infrastructural, environmental, and social resources.

5.2 Land Use Objectives

It shall be the objective of the City of Lancaster to:

1. Promote development, while protecting the character of existing neighborhoods, minimizing its impacts on environmental resources, incurring no adverse economic costs for its residents, and yielding social benefits.

2. Reconcile existing and prevent future discordant land uses by establishing adequate interface among conflicting uses and functions.

3. Support the protection of open space and recreational resources while providing for appropriate development.

4. Provide areas where residential, commercial, industrial, recreational, open space, and public service uses may be developed in harmonious patterns and with all the necessities for a satisfactory living environment.

5.3 Land Use Policies

It shall be the policy of the City of Lancaster to:

<u>Issue One</u>: <u>Population Growth and Urban Development</u>

1. Accommodate population growth and associated land use development within the City of Lancaster and its planning area within the limits of the natural environmental,

economic, and/or urban systems.

2. Evaluate the costs, benefits, and trade-offs of further development beyond the capacities of the natural environmental, economic, and/or urban systems.

3. Encourage further development only as the capacities of supporting systems are expanded.

4. Provide for development in the City and encourage similar action in its planning area which is consistent with the Plan and encourage other governmental and private agencies to do the same.

Issue Two: Pattern of Population and Land Use Development

1. Accommodate population growth and land use development in multinucleated centers consisting of a diversity of land use types and densities.

2. Encourage the maintenance and renewal of existing developed areas.

3. Encourage urban development in areas served by streets, water, sewerage, and other public services.

4. Facilitate expansion of urban service areas as demand warrants in areas contiguous to those already served.

5. Preserve the open space, historic buildings, recreational opportunities, and the distinct identities of neighborhoods.

6. Interpret the General Plan land use map residential designations as averages to provide for the clustering and/or mixing of dwelling unit types.

Issue Three: Capacity of the Plan

1. Designate sufficient land to accommodate projected growth and a "reasonable" excess to provide adequate flexibility.

Issue Four: Environmental Constraints

1. Limit and control future land use development in areas considered to be significantly hazardous to the health and welfare of the public unless appropriate corrective measures can be implemented.

2. Regulate land uses within flood-prone areas and apply appropriate development standards in their surrounding floodplains, to be designated as "Floodprone Management Areas."

3. Acquire, where feasible, floodways or watercourses for park and recreational uses which can be developed within environmental constraints.

4. Accommodate industrial land uses in consideration of their impact on local and regional air quality and prevailing climatological conditions.

5. Cooperate with appropriate jurisdictional agencies to pursue programs to mitigate the flooding attributable to watersheds affecting the City and its planning area.

6. Encourage groundwater recharge in suitable areas.

Issue Five: Environmental Sensitivities

1. Direct development away from designated areas exhibiting high levels of environmental sensitivity unless effective mitigation measures can be implemented.

2. Minimize the disruption and degradation of environmental systems (vegetative, wildlife, geologic, water, air, climate) as land use development occurs.

3. Encourage and support enforcement of state and federal controls on pollutant (air, water, biotic, visual, noise) sources and, as appropriate, effectuate local controls.

Issue Six: Land Parcelization

1. Encourage the preservation of large parcels, as feasible, to facilitate economic land use development.

2. Discourage premature land fragmentation to lessen the need of parcel assembly necessary for significant land use developments.

3. Provide incentives to developers and land owners for the assembly of parcels into economically viable units and retain the option for participation in such assembly.

4. Allow for a reversion of zoning to its original designation when the zoning of a property has been increased in density or intensity of use and is not developed within a "reasonable" period of time.

Issue Seven: Land Use Compatibility

1. Provide for the development of land uses in a compatible and orderly manner. Those which exhibit conditions which conflict shall not be permitted to locate adjacent to one another or shall be required to implement measures to realize an effective interface (e.g., buffer, wall, etc.).

2. Prohibit the development of noise-sensitive uses (residential, schools, health care facilities, libraries, museums, etc.) in areas exposed to noise levels in excess of a CNEL of 65 dB(A) from freeways, railroads, airports, major highways, and rapid transit lines unless external mitigation measures can be implemented (e.g., free standing walls, earth berms, etc.) which effectively reduce the noise exposure.

3. Encourage and implement, as feasible, noise abatement techniques along the Antelope Valley Freeway, Southern Pacific Railroad, and other major transportation corridors to protect existing adjacent noise-sensitive uses.

4. Limit odor-generating uses and any other sources of localized air pollutants to those areas of the City which will not adversely affect other land uses.

Issue Eight: Public Services

1. Encourage the development of public services to meet the needs of the City of Lancaster and its planning area; including health, education, police and fire protection, public transportation, government operations, recreation, cultural, utility, and others which may be appropriate.

2. Locate public services and facilities so that they are easily accessible to the residents.

3. Establish a major civic and cultural center to be a focal point for the community's identity. Such would include governmental administrative offices, libraries, museums, performing arts facility, public meeting halls, and other community-oriented uses.

Issue Nine: Redevelopment

1. Encourage the redevelopment of deteriorating urban areas including rehabilitation, demolition, and rebuilding as appropriate.

2. Encourage and enforce pertinent ordinances for continued maintenance and renovation to prevent community deterioration.

3. Conduct redevelopment programs when deemed appropriate by the City in accordance with California State Law.

4. Identify and designate for study potential redevelopment areas (survey areas) throughout the City. Initially, those which should be considered include:

   a. the area bounded by Avenue I, 10th Street West, Division Street, and Avenue J;

   b. all areas within 400 feet of the centerline of the Southern Pacific Railroad line; and

   c. the area north of Avenue I, between Cedar Avenue and Division Street.

5. Residential densities should be increased adjacent to existing "strip" commercial areas to encourage economic maintenance and revitalization of the commercial areas.

Issue Ten: Implementation of Enforcement of the General Plan

1. Require adherence to the policies and programs of the General Plan Elements. Processed amendments which deviate from the Plan's intent shall be carefully weighed for appropriateness and impact. Flexibility of the General Plan shall be encouraged as a means of accommodating changing demands and lifestyles and including innovation for the benefit of the community. However, the General Plan shall not be flexible to the point that policies become meaningless as an active and persuasive tool in guiding the community's future.

2. Projects conforming to the intent of the Plan and the Master Environmental Impact Report shall be considered for a Negative Declaration. If significant effects beyond those spelled out by the Master Environmental Impact Report are found, a "focused" Environmental Impact Report shall be prepared.

3. When appropriate, the City shall utilize performance standards to apply to development of the City of Lancaster. Such techniques as "Planned Development" shall be encouraged.

4. Develop an effective zoning ordinance to implement land use policies and the following criteria should be considered for proposed rezonings beyond those uses depicted on the plan:

   a. the impact of the proposed change on the immediate area, City, and its environs;

b. the proposed change will not materially add to the existing surplus of such zoning in the City and it shall be clearly demonstrated that the need for such rezoning cannot be met by the resource of existing zoning; and

c. the proposed rezoning is consistent with the policies prescribed elsewhere in this Element and the Land Use Plan.

5. Encourage innovation, efficient use of land, design merit, and provision of amenities over strict adherence to prescribed zoning and development standards.

Issue Eleven: Expansion of Corporate Limits

1. Expand corporate limits to accommodate urban development in areas which have the ability to attain economic, social, and environmental benefit to the City.

Issue Twelve: Commercial Development

1. Encourage the development of an appropriate mix of centralized and "strip" of linear, commercial uses. The former should be developed to serve the regional, subregional and community demands; the latter to meet specified needs of the community and neighborhood units.

2. Maintain the economic viability of existing "strip" commercial areas by designating adjacent areas for medium- and high-density residential development where appropriate.

3. Structure commercial centers to function as focal points for neighborhood groupings.

Issue Thirteen: Community Design

1. Improve key entry points of the City of Lancaster by landscaping and attractive signage.

2. Establish landscaping and signage standards for commercial centers.

3. Restrict billboard development to specified commercial areas of the City.

4. Establish design criteria for on- and off-premise signs and billboards.

5. Support a long-range program for the underground relocation of overhead power distribution facilities, telephone lines, and other utility services.

6. Utilize landscaping along major thoroughfares (parkways, median strips, etc.) to provide visual interest. Native vegetation should be utilized as feasible to emphasize the environmental characteristics of the area.

7. Establish a system providing for variation in the use of street trees, lighting, and other details to give streets better visual continuity and provide differentiation between through streets and local streets. The variations could include size, spacing, and species of street trees and other landscaping; color, intensity, spacing, and design of lighting fixtures; color, size, and design of street signs; and color tint or texture of pavement.

8. Develop a common graphic format for street and public facility identification and traffic control signage.

9. Encourage the inclusion of open spaces in subdivisions and provide for their linkage.

10. Encourage the landscaping of the banks of flood control channels with trees as a strong visual element in the City.

11. Locate and design public facilities to act as a major visual element of overall community appearance.

12. Implement appropriate design measures to ensure buffering between commercial, residential, and industrial areas.

Issue Fourteen: Costs of Urban Services

1. Require that as non-contiguous development occurs, the project shall bear all the costs directly attributable to the demand it places on urban services and establish a procedure for reimbursement by the City to the developer for the assessment of intervening projects as they occur.

5.4 Land Use Policy Maps

It shall be the policy of the City of Lancaster to accommodate development in its corporate limits according to the Land Use Plan (rear pocket of this document). Further, the City shall encourage that development in its planning area be accommodated according to this plan.

5.4.1 City of Lancaster Land Use Plan

Consistent with the policies articulated in section 5.3 of this element, the Land Use Plan for the City of Lancaster provides for the (1) reinforcement of the existing pattern of land uses and (2) establishment of new commercial and industrial centers and residential neighborhoods. Conceptually, the overall organizational framework for the City's uses consists of two elements: (1) a series of activity and functional centers and (2) a linear industrial/circulation corridor. These function as "anchors" around which other land uses are focused. Major community centers, corridors, and sub-areas include:

1. Regional Commercial District

   Approximately 175 acres flanking 10th Street West and south of Avenue K are designated for regional commercial uses. This will serve as a primary focal point for commercial activity for the residents of the greater Antelope Valley. Undeveloped areas on the periphery of this center, to the east and southeast, are allocated for high density residential uses. To the southwest is the currently developing Civic Center Park and commercial uses. The western boundary is defined by the Antelope Valley Freeway and the north by existing single family residential.

2. West Lancaster Sub-Regional Commercial Center - Antelope Valley College Corridor

   To serve the shopping needs of the estimated 60,000 to 70,000 residents of the areas of the City west of the Antelope Freeway, Quartz Hill, and in the foothill communities, a sub-regional commercial center will be accommodated in the vicinity of 30th Street West and Avenue L. Acting as a nucleus of development, moderate and high density residential will be accommodated on it periphery. The moderate density units would be extended north in a corridor along 30th Street West to Antelope Valley College, which would function as another center.

3. East Lancaster Sub-Regional Commercial Center

   To serve the shopping needs of the residents of the City east of Sierra Highway, an estimated 40 acres in the vicinity of 20th Street East and Avenue J has been allocated for sub-regional commercial uses. Areas immediately surrounding this center are designated for high and moderate density residential.

4. Lancaster Boulevard ("Downtown") Center

Commercial areas in the City's historic downtown area, along Lancaster Boulevard, are designated for intensification and redevelopment. To increase the viability of these uses, adjacent residential areas, between Avenues I and J, are designated for evolution or redevelopment for high density residential use.

5. Sierra Highway Industrial Corridor

A variable width corridor of land east of and adjacent to Sierra Highway and the Southern Pacific Railroad is allocated for light and medium density industrial uses. Areas along the corridor's perimeter, generally, Division Street, are allocated for moderate density residential and commercial use.

6. Airport Industrial Park

Approxiamtely 1,600 acres east of the Antelope Valley Freeway and between Avenues L and M, are allocated for light industrial use. Adjacent to U.S. Air Force Plant 42, the areas is intended for aerospace, research and development, office, and other high technology uses.

7. Avenue I and 20th Street West Center

Areas flanking the intersection of Avenue I and 20th Street West are designated for highway-oriented and/or neighborhood commercial uses. Surrounding areas, including those adjacent and parallel to the flood control channel, are designated for moderate density residential uses.

8. Avenue J to Avenue K and Antelope Valley Freeway to 12th Street West Mixed Use Center

In a center established east of the Antelope Valley Freeway, flanking 15th Street West, and between Avenues J and K, a mixture of commercial and high and moderate density residential uses is designated. Generally, the commercial uses are located along Avenue J and adjacent to the freeway. Immediately adjacent areas which are undeveloped are allocated for moderate and high density residential use.

9. Avenue I Corridor

Moderate density residential uses are designated for a variable width corridor along Avenue I between

10th Street East and 22nd Street East. Those surround highway-oriented and neighborhood commercial centers which will be accommodated at Avenue I and 10th and 20th Streets East.

10. Avenue K and 10th Street East Center

    Areas flanking the intersection of Avenue K and 10th Street East are allocated for highway-oriented and neighborhood commercial uses. North of Avenue K, the areas surrounding these are designated for moderate density residential use.

The remainder of the City is characterized by smaller commercial and industrial centers and residential neighborhoods of varying densities. Generally, the areas allocated for the lowest density residential development are located on the City's periphery.

In certain areas, development of these land uses will necessitate the exercise of measures to protect the land and use against the harmful effects of flooding and excessive noise exposure. Floodprone areas, as depicted on the plan, are found in the northwest of the City, east of and adjacent to the Antelope Valley Freeway (California State Route 14), and east of and adjacent to the Sierra Highway-Southern Pacific Railroad corridor. Noise impacted areas are found along major highways, the Southern Pacific Railroad, and in a broad corridor between Avenues L and M, generally east of the freeway.

5.4.2 Planning Area Land Use Plan

Outside of its corporate limits in the planning area, it is the policy of the City of Lancaster to continue the previously defined land use plan of the County of Los Angeles, with some variation in the Fox Field vicinity. Conceptually, the plan recognizes and reinforces two centers, both separated from the City by very low density residential and agricultural uses. These centers include:

1. Quartz Hill

    Quartz Hill is an existing community to the southwest of the City, characterized by its low density, single family residential character. Local neighborhood-serving commercial, clusters of moderate density dwellings, and schools are scattered throughout the area. The plan allows for the continuation and reinforcement of this pattern of uses. Community and highway-oriented commercial uses will be accommodated on 40th Street

West, between Avenues L and M, and at the intersection of 45th Street West and Avenue L. Clusters of moderate density residential will be accommodated in a number of areas west of 55th Street West, between Avenues L and M, and on Avenue L, between 40th and 45th Streets West. Low density residential areas extend to 75th Street West in the west, Avenue H in the south, 40th Street West in the east, and Avenue L in the north.

2. Fox Field

Fox Field is recognized as a potential attractor of industrial and commercial development. To accommodate these uses, a variable width corridor of one-half to one mile is allocated on the airport's perimeter. This would also function as a potential expansion area for the airport itself. Commercial uses will be accommodated at the airport's entry on 50th Street West. Recognizing that it is unlikely that the entire corridor would be developed in the near-term, the western and northern segments are designated as an "airport buffer" which would accommodate a number of interim uses, as well as industrial, commercial, and airport facilities.

Two other significant uses are dispersed in the City's planning area. Between Avenues I and J and 50th and 60th Streets West is the County of Los Angeles, Mira Loma Detention Facility. To the north of the City, between Avenues C-4 and D and 20th Street West and Sierra Highway is the County of Los Angeles Sanitation Treatment Plant and associated facilities. Neither of these act as an attractor of significant development and, as a consequence, peripheral areas are designated only for very low residential densities and agricultural use.

Immediately adjacent to the City, flanking 20th Street West between Avenues G and H, an area is designated for commercial recreational uses. This recognizes the opportunities afforded by Lake Lancaster, west of 20th Street West.

Remaining areas within the City's planning area are designated for very low residential densities, at one dwelling for each 2.5 acres and less. This designation permits the continuation and enhancement of agricultural activities.

As in the City's corporate limits, development of some of these uses will necessitate the implementation of measures to protect the property and use from the hazards of flooding. These areas are delineated on the plan.

5.4.3 Capacity of the Land Use Plan

Within the corporate limits of the City of Lancaster is 37 square miles, or 23,680 acres. The Land Use Plan will allow for the development of approximately 63 percent of the net acreage (excluding public rights-of-way and easements), or 14,934 acres, for residential use. For commercial uses, 4 percent, or 942 acres, is allocated. An additional 470 acres could be developed at the intersection of arterials and secondary highways within the provisions of the standards of development (Section 5.5.2). For industrial uses, 8.9 percent, or 2,114 acres, is allocated. Major public rights-of-way and easements, excluding the Antelope Valley Freeway and Amargosa Creek drainage channel, will account for 16.5 percent, or 3,896 acres, of the land area. Table 1.27 summarizes the allocations of the Land Use Plan.

Outside of the City's corporate limits in its planning area, the plan is commensurate in its allocations and capacities with the proposed County of Los Angeles General Plan. An exception is the area immediate to Fox Field. An additional 840 acres is designated for industrial uses, 2,560 acres as an airport buffer (affording the potential for industrial, airport-related uses, airport expansion, or similar uses), and 160 acres for commercial use.

Development of housing in accordance with the plan, at the median level within each density range, will accommodate a population of 212,939. Each of the four population forecasts for the City, ranging from 73,132 to 164,118, is well within this capacity. Table 1.28 summarizes the population which could be accommodated within each residential density classification.

TABLE 1.27
GENERAL PLAN LAND USE CAPACITY

USE	ACREAGE				PERCENTAGE	
	TOTAL CATEGORY		SUB-CATEGORY			
	GROSS[1]	NET[2]	GROSS[1]	NET[2]	GROSS	NET
Residential	18,087	14,934			76.4	63.1
NO2 (1 du/ga)			6,671	5,671		
R (3-7 du/ga)			8,622	6,898		
MR (7.1-15 du/ga)			1,862	1,583		
MR2 (15.1 du/ga+)			923	782	4.9	4.0
Commercial[3]	1,166	942				
C (General)			911	729		
SRC (Sub-Regional)			80	64		
RC (Regional)			175	150		
Industrial	2,642	2,114			11.2	8.9
LI (Light)			2,260	1,808		
MI (Medium)			382	306		
Public (Currently Owned)	150	150			0.6	0.6
Educational	886	886			3.7	3.7
Existing			455	455		
Future[4]			431	431		
Parks	348	348			1.5	1.5
Existing			90	90		
Future[4]			258	258		
Freeway	343	343			1.4	1.4
Flood Control	67	67			0.3	0.3
Rights-of-way	NA	3,896				16.5
TOTAL	23,680	23,680			100.0	100.0

[1]Includes public rights-of-way and easements

[2]Excludes public rights-of-way and easements

[3]Development in accordance with the standards of development for commercial uses at arterial and secondary highway intersections could yield an additional 470 acres of such development and a corresponding reduction of residential use.

[4]Areas not allocated in the land use plan.

TABLE 1.28

POPULATION CAPACITY OF THE LAND USE PLAN

CLASSIFICATION	NET ACREAGE	DWELLING UNITS PER ACRE	DWELLING UNITS UNITS	POPULATION PER DU	POPULATION TOTAL	POPULATION PERCENTAGE
	5,671	1	5,671	3.2	18,157	8.5
R	6,898	6	41,388	3.2	132,436	62.2
MR	1,583	12	18,998	1.8	34,194	16.1
MR2	782	20	15,640	1.8	28,152	13.2
TOTAL	14,934		81,697		212,939	100.0

5.5 Land Use Classifications and Standards of Development

Classifications of use depicted on the land use map are general and each encompasses a range of discrete uses. The mechanism which precisely defines the type of use which may be accommodated on any parcel within the general allocations of the Land Use Plan is the Zoning Ordinance. Though one is general and the other specific, the Plan and Ordinance must be consistent. The following outlines the types of use which may be accommodated within each Land Use Plan classification of use. In addition, general standards of development and flexibility are specified.

5.5.1 *RESIDENTIAL*

Classifications

NU1 — Non-urban Residential, Very Low Density: a maximum of one (1) dwelling unit per two and one-half gross acres.

NU2 — Non-urban Residential, Low Density: a maximum of one (1) dwelling unit per gross acre.

RL — General Residential, Low Density: one (1) to three (3) dwelling units per gross acre.

R — General Residential: three (3) to seven (7) dwelling units per gross acre.

MR — Moderate Density Residential: 7.1 to 15 dwelling units per gross acre.

MR2 — High Density Residential: 15.1 dwelling units per gross acre and greater.

Standards of Development

1. Density designations do not imply a dwelling unit type (e.g., 7 dwelling units per gross acre is developed for single family units); rather, the average number of units which may be accommodated regardless of type or mix.

2. Clustering and a mixture of unit types is encouraged, according to the following conditions:

a. open space is classified as a "non-buildable" area, available for recreational use and aesthetic relief;

b. the development complies with the City's Planned Unit Development guidelines; and

c. there are no adverse impacts on adjacent properties.

Envelopes of Flexibility

All residential density classifications: a flexibility distance of 330 feet[1], provided that the following conditions are attained:

1. The relationship among land use types depicted by the Land Use Plan are maintained (e.g., higher densities adjacent to and buffering industrial and commercial uses);

2. Adequate sewage treatment and water supply can be provided;

3. No revisions to the Circulation Plan for primary and secondary street locations and width, freeway interchanges, or railroad overpasses are necessitated;

4. No significant adverse environmental impacts are realized.

5.5.2 *COMMERCIAL*

Classifications

C General Commercial: a broad spectrum of uses fall into this category, including the traditional concepts of "community", "neighborhood", and "highway-oriented" commercial. These may include supermarkets, small clothing stores and gift shops, shoe stores, drug stores, hardware stores, jewelery stores, specialty stores, fast-food facilities, restaurants, professional offices, automobile service and gasoline supply,

[1]All flexibility distances are measured from the legal property line.

banks and savings and loan establishments, medical offices and clinics, motels and hotels, cleaners and laundries, movie theaters and entertainment facilities, automobile sales, and other similar functions.

SRC Sub-Regional Commercial: uses serve a market of 25,000 to 50,000 residents. These may include one small to medium department store, supporting clothing and service stores, specialty stores, banks and other financial establishments, gift stores, restaurants, supermarkets, cleaners and laundries, hardware stores, professional offices, medical offices and clinics, and other like functions. It would contain 100,000 to 250,000 square feet of commercial floor area.

RC Regional Commercial: uses which serve a market area of many square miles and a population of 150,000 to 200,000. Potential uses would include major department stores, supporting clothing and service stores, specialty stores, gift stores, restaurants, theaters, professional offices, banks and other financial institutions, motels and hotels, entertainment facilities, automotive sales and service, medical offices and clinics, and other like functions. It would contain 400,000 to 1,000,000 square feet of commercial floor area.

Envelopes of Flexibility

1. Regional Commercial: no flexibility to the north, south, or west, a maximum of 150 feet to the east.

2. Sub-Regional Commercial:

   a. East Lancaster Center (vicinity of 20th Street East and Avenue J): location in any direction from the intersection is acceptable, provided that:

      1) development occurs in any of the four quadrants, provided that it is no smaller than 10 acres and a minimum of 20 acres is retained in one quadrant;

      2) development extends a maximum of 1320 feet from the intersection; and

3) a buffer of moderate and high density residential is maintained in accordance with the general relationships depicted on the plan.

b. West Lancaster Center (vicinity of 30th Street West and Avenue L): location on the northeast quandrant only.

3. General Commercial: a maximum of 165 feet, excepting across a major or secondary arterial.

<u>Conditions of Development for Commercial Uses Whose Aggregate is Less than 10 Acres and is not Depicted on the Plan</u>

1. An aggregate of 10 acres may be developed at the intersection of any arterials, not depicted on the land use map, provided that no additional commercial use exists or is planned (designated by zoning and/or the General Plan) within 1320 feet.

2. An aggregate of 5 acres may be developed at the intersection of any secondaries or a secondary with an arterial, not depicted on a land use map, provided that no additional commercial use exists or is planned (designated by zoning and/or the General Plan) within 1320 feet.

3. Commercial development must be compatible with adjacent development as measured by:

   a. traffic/circulation adequacy

   b. noise

   c. lighting

      1) spillover on adjacent properties
      2) neighborhood ambient levels
      3) general visibility

   d. visual quality

      1) architectural character
      2) landscaping
      3) building colors, materials and texture
      4) building mass and bulk
      5) siting and setback

e. signage

f. accessibility

4. Commercial developments in excess of 10 acres at arterial intersections and secondary-arterial intersections, not depicted on the land use map, will necessitate an amendment to the General Plan.

5. As any arterial commercial aggregate attains 8.0 acres and secondary and secondary-arterial aggregate attains 4.0 acres (as determined by zoning and/or tract map approval), the City shall undertake a study to determine the appropriateness of an amendment to the General Plan.

5.5.3 *INDUSTRIAL*

Classification and Conditions of Development

LI Light Industry: shall be clean, non-polluting, not emit offensive odors, attractively landscaped, and visually attractive. Emphasis is placed on development in accordance with "industrial park" standards of visual and physical quality. Generally, the category would include "research and development" types of industries, small manufacturers, etc.

MI Medium Industry: by definition, medium industry is normally less attractive than light industry, due to the nature of its operation. It should be heavily landscaped and screened to prevent visual blight. Care should be taken to preserve regional air quality.

Envelopes of Flexibility

All designations are fixed except the area north of Avenue H-8 and east of Division Street, which shall have a flexibility of 330 feet.

5.5.4 *PUBLIC FACILITIES*

Classification

P Public Facilities: uses in the public ownership would include governmental administrative facilities (City and County), police and fire stations, community centers, arts and cultural facilities, museums, libraries, and other like functions.

Envelopes of Flexibility and Conditions of Development

1. Existing facilities: locations are fixed.

2. Future facilities: unless property is publicly owned, the location of future public facilities are not depicted on the land use map. Their location will be variable, as they should be dispersed throughout the City to efficiently serve the residents.

5.5.5 *SCHOOLS*

Classification

S Schools: uses include public and private schools. Existing schools are specifically delineated, future schools are represented symbolically.

Envelopes of Flexibility

1. Existing elementary and high schools: no flexibility.

2. Proposed high schools: variable. The precise location is a function of population necessity to support the facility; i.e., the frequency of schools is related to the residential density and characteristics of the household (number of children). The following should serve as a general guide to their precise location:

   a. they should be centralized relative to neighborhoods that they serve; and

   b. they should be located on arterial streets.

3. Proposed elementary schools: variable. In general, the same conditions as high schools should be met, except they should not be located on arterials. Since they service a smaller residential area, they should be located as a focal point of the neighborhood, not on the periphery.

5.5.6 *PARKS*

Classification

PK Parks: uses include publicly-owned parks. Existing parks are specifically delineated, future parks are represented symbolically.

Envelopes of Flexibility

1. Existing uses: locations are fixed.

2. Future uses: unless property is publicly owned, specific park sites are not depicted on the land use map. Their locations will be variable, as they should be dispersed to meet the needs of the residents (refer to the Environmental Resources Management Element).

5.5.7 *AIRPORT BUFFER*

Classification

B Airport Buffer: to preserve the "integrity" of the operations and potential expansion of Fox Field and its compatibility with adjacent land uses. Uses which may be accommodated include agricultural production, industry, recreation, treatment plants, energy substations, non-sensitive commercial or other similar types of use.

Envelopes of Flexibility

The "Buffer" extends one mile (or as designated on the land use map) on all sides of Fox Field and is fixed.

5.5.8 *HEALTH CARE FACILITIES*

Classification

H Health Care Facilities: uses include publicly and privately-owned hospitals and health care facilities.

Envelopes of Flexibility

1. Existing uses: locations are fixed.

2. Future uses: unless property is publicly owned or privately held with the intent to develop, locations for future health care facilities are not depicted on the land use map. Their specific location will be a function of the dispersal of and accessibility to the population.

5.5.9 *SPECIAL MANAGEMENT AREAS*

A number of areas within the City of Lancaster and its planning area are impacted by adverse environmental conditions which necessitate implementation of special design measures to accommodate the underlying land use designation. If corrective measures cannot be successfully employed, uses shall be limited to those allowed by the existing parcel. These overlays will include:

Classifications and Conditions of Development

F Floodprone Management Areas: for development to proceed, appropriate protective measures shall be implemented, subject to approval of the City Engineer. The project shall not adversely affect the drainage on adjacent properties; and any development or design feature which would increase the level of the "design flood" by more than one foot shall be offset by approved design improvements (at the developer's expense).

N Noise Impact Management Areas: for development to proceed, appropriate protective measures shall be implemented, subject to approval of the City Engineer. These measures require that in areas exceeding an L_{dn} of 65 dB(A):

1. Residential uses at densities greater than one unit per existing parcel cut or one acre, whichever is smaller, shall be accommodated only if any of the following noise attenuation measures can be successfully implemented:

    - construction of a noise attenuation barrier (concrete block wall, earthern berm, trees, etc.) between the source and receptor which effectively reduces the exposure of the site to a level below an L_{dn} of 65 dB(A), or

    - dwelling units can be sited outside of the L_{dn} of 65 dB(A) contour.

2. Critical noise-sensitive uses (e.g., schools, health care facilities) shall be specifically excluded.

3. Non-sensitive industrial, commercial, agricultural, open space, and public utility (substations, treatment plants, etc.) shall be permitted.

HM <u>Hillside Management Areas:</u>

1. Terrain where the average slope exceeds 15 percent are classified as "Hillside Management Areas". The objective of this classification is to relate the number and distribution of structures and land uses to the topographic, geological, and hydrological conditions of the hillsides so that the terrain will retain its natural and scenic character, and the danger to life and property by the hazards of fire, flood water pollution, soil erosion, and land slippage will be minimized.

2. Consistent with these objectives, compatible uses have been identified for lands located within the Hillside Management Areas. These uses include residences, recreation, agriculture, mineral extraction, and certain other uses commonly found in hillside areas.

   Residential densities shall be limited to those defined in the table given on the following page. It is intended that densities may be accumulated and developed in a "clustered" manner on the flatter lands, in a manner consistent with development in rural hillside areas.

   Provision of open space in a natural state is also an important part of the Hillside Management Area concept. To this end, a minimum of 75 percent of the Hillside area to be included within a development proposal shall be retained in a natural condition. Where the average slope of the property, or portion thereof, exceeds 50 percent, 90 percent of that portion of the property which exceeds 50 percent slope shall be retained in a natural condition. Within these required natural areas, replacement of vegetation required for fire suppression purposes or recreational riding and hiking trails (requiring minimum grading) will be permitted.

   The following slope/development/open space standards shall apply to the designated Hillside Management Areas:

Average Slope	Max. Project DU/AC	Min. O/S
15 - 29.9%	0.5	75%
30 - 49.9%	0.2	75%
50%+	0.05	90%

Areas of one acre or more within the designated Hillside Management Area which have an average slope of less than 15 percent may be developed in accordance with the Non-Urban Category.

3. Roadway right-of-way requirements should vary to reflect the unique topographic characteristics of hillsides. When considering a specific project, the developer should work closely with the City Engineering and Planning Departments to determine the minimum width necessary for health and safety.

V Vegetation Management Areas (VMA): these areas contain significant stands of Joshua trees and California juniper, the threatened Alkalai mariposa and Mojave spine flower, or fragile riparian and desert wash habitat. Development in accordance with the underlying land use designations can proceed provided that the following protective mitigation measures are taken:

Joshua Tree and California Juniper Habitat (south of Avenue L and west of 20th Street West)

1. Eighty (80) percent of existing Joshua trees and California juniper, or a percentage determined by a qualified botanist to be sufficient for the habitat's continued productivity, shall be retained.

2. On submittal of zone change application or subdivision map, whichever is precedent, the developer/owner shall include:

   a an aerial photograph of the site

   b. a report by a qualified botanist which

      1) depicts the location of each Joshua tree and California juniper on the site

      2) discusses their age and health

   c. a plan for the attainment of the above standard

d. a site landscaping plan

Alkalai Mariposa and Mojave Spine Flower Habitat (Areas bounded by 3rd Street East, 10th Street East, Avenue H, and Avenue H-8 and Division Street, 5th Street East, Avenue L, and Avenue M)

1. All Alkalai mariposa and Mojave spine flower vegetation, or a percentage determined by a qualified botanist to be sufficient for the habitat's continued productivity, shall be retained.

2. On submittal of zone change application or subdivision map, whichever is precedent, the developer/owner shall include:

   a. an aerial photograph of the site

   b. a report by a qualified botanist which

      1) depicts the location and distribution of Alkalai mariposa and Mojave spine flower on the site

      2) discusses their age and health

   c. a plan for their preservation

   d. a site landscaping plan

Desert Creeks and Washes

1. All riparian and desert wash vegetation determined to be significant and necessary for its continued productivity shall be preserved.

2. On submittal of zone change applications or subdivision map, whichever is precedent, the developer/owner shall include:

   a. an aerial photograph of the site

   b. a report by a qualified botanist which

      1) depicts the location and distribution of significant riparian and desert wash vegetation on the site

      2) discusses the significance of the vegetation and justifies the need for its preservation

c. a plan for the preservation of those habitats considered significant

d. a site landscaping plan

5.6 Land Use Programs

Programs presented in this section establish a framework for guiding the management of land uses in the City of Lancaster and its planning area in accordance with the policies of this element. These programs represent a coordinated set of actions which when implemented will enable the City to attain the goals set forth in response to defined issues. Any program may relate to any one or a combination of goals and/or policies (e.g., a program to provide channelization in floodprone areas would mitigate an environmental hazard, stimulate the consolidation of development, and facilitate the accommodation of population growth and urban development). These were selected for their (1) potential effectiveness in attaining defined goals and policies, (2) economic feasibility, (3) minimal or beneficial environmental effects, and (4) compatibility with community attitudes. These include:

1. The City Council should adopt and enforce the Land Use Map and its standards of development for its corporate limits.

2. The City should encourage the County of Los Angeles to incorporate pertinent land use goals, policies, and standards cited in this element for the City's planning area.

3. The City of Lancaster Zoning Ordinance should be modified to be consistent with the land use policies and goals cited herein. Increases in zoning density should be accommodated at the initiation of the property owner only and not as a unilateral action by the City.

4. Zoning increases granted at the request of the land owner should be held valid for a two (2) year period and if development has not commenced in that period the zoning should revert to its original classification. An extension should be granted only if the owner can adequately demonstrate that development will proceed in twelve (12) months.

5. Modification of the existing zoning to uses and densities greater than permitted by the plan will necessitate a change in the General Plan, three of which are permitted during any year. Criteria which should

be used in evaluating the appropriateness of plan changes should include:

a. economic costs and benefits,

b. significant environmental effects,

c. compatibility with adjacent land uses,

d. impacts on traffic and circulation systems,

e. adequacy of public service systems to accommodate the change, and

f. impacts on the long-term development phasing of the City.

6. Each procedure for amending the General Plan shall consider any and all requests for modifications according to policies and procedures to be established by the Planning Commission and City Council.

7. For proposed land use developments contiguous with existing uses consistent with the goals and policies of this plan, the City should establish an "environmental record" consistent with the requirements of the California Environmental Quality Act (CEQA) and consider the appropriateness of the issuance of a "Negative Declaration." When inconsistencies are noted (e.g., density, site coverage, height, etc)., an "Initial Study" and, when appropriate, "Focused Environmental Impact Report" addressing relevant impact issues should be proposed. Projects located outside of the central Lancaster area should be subject to an "Initial Study" and, if significant effects are identified, a "Focused EIR" prepared.

8. The City Planning Department should encourage the submittal, adoption, and inclusion of "Specific Plans" in the General Plan for significant residential, commercial, industrial and mixed use development, pursuant to Article 8, Section 65450 et seq of the California Government Code.

9. The City should establish procedures for the use of "development rights transfer" for the preservation and conservation of properties considered to display special socio-cultural, historic, and/or environmental significance. This process should only be initiated by the City and would involve:

a. designation of areas by the City which are <u>currently</u> zoned for use which should be preserved as open space or of a use or density <u>less</u> than permitted by the zoning; as a potential "transfer of development rights" parcel (TDR);

b. as the land owner seeks to develop a TDR parcel, the City should seek to find owners of other parcels who wish to obtain development rights greater than permitted by the zoning on their property and negotiate with these a financial sale, or transfer, of development rights from the parcel to be preserved/conserved to the other parcel;

c. the City must determine, in a formal, circulated report, that the transfer of development rights will:

   (1) not incur significant economic costs to the City and its residents,

   (2) not accrue significant adverse environmental effects,

   (3) not incur incompatibilities among adjacent land uses,

   (4) not be accompanied by a change of zoning or General Plan designation on parcels adjacent to the parcel to which development rights are being transferred,

   (5) not exceed the capacity of public service systems required to support the greater use, and

   (6) not adversely affect the long-term development phasing of the City.

10. The City adhere rigorously to the "standards of flexibility" and "conditions of development" cited in this plan.

11. The City should pursue the expansion of public service infrastructural and socio-cultural systems as demand occurs and it can be demonstrated that sufficient revenue is available or will be generated to support the system(s). Normal assessment procedures should be continued. When development is proposed which is non-contiguous to existing systems, the City and/or affected service agency shall:

a. identify the costs of providing service to the project;

b. design the service facility to be sufficient to accommodate the demand which would be generated by the land uses permitted in the area between the proposed project and existing service facility;

c. identify the costs of the design improvements necessitated by the project and those in the intervening area; and

d. assess the developer for his pro-rata share of these improvement and service costs.

Public service programs should include, but not be limited to:

a. Sewage Systems (County Sanitation District 14)

   (1) Expansion of service lines

   (2) Expansion of the treatment facility

b. Water Systems (Lancaster Annex No. 4, County-Quartz Hill Water District, Palm Ranch Irrigation District)

   - Expansion of service lines

c. Energy Systems (Southern California Edison Company, Southern California Gas Company)

   (1) Expansion of service lines

   (2) Implementation of and encouragement of energy conservation measures

   (3) Expansion of generation systems

d. Roads, Highways and Transit

   (1) Development of and expansion of systems consistent with the policies and programs of the Circulation Element

   (2) Development of new modes of travel

   (3) Encouragement of reduced vehicle miles traveled

e. Communication (Pacific Telephone)

- Expansion of service lines

f. Solid Waste

(1) Expansion of solid waste removal routes

(2) Establishment of new disposal sites

g. Flood Control

(1) Amargosa and Anaverde Creeks should be channelized (soft bottoms, swales, concrete boxes, or other means) in urban areas.

(2) Arterial and secondary highways should be designed to assist in carrying flood waters through the City.

h. Civic and Cultural (museums, libraries, performing arts, etc.)

(1) Expand as sufficient revenue is available

(2) Disperse in proximity to the user community

(3) Establish a civic center area as the focal point of community activity, incorporating libraries, museums, meeting rooms, and other appropriate facilities.

i. Public Safety (Police and Fire)

(1) Expand the personnel and facilities as required

(2) Disperse throughout the community to meet the needs of the residents

j. Health Services

(1) Expand the personnel and facilities as required

(2) Develop a systematic service delivery system, composed of central treatment facilities, dispersed clinics, and, as appropriate, mobile treatment units.

k. Recreation

- Expand consistent with the policies and programs of the Parks and Recreation component of the Environmental Resources Management Element.

12. The City should designate the following as redevelopment "survey areas" and initiate studies to determine the appropriateness of developing a Redevelopment Plan:

    a. The commercial-industrial strip along the Sierra Highway and Southern Pacific Railroad right-of-way.

    b. The area bounded by 10th Street West, Avenue I, Division Streets, and Avenue J.

    c. The area north of Avenue I, between Sierra Highway and Division Street.

13. The City should initiate the preparation of a master landscaping plan for the public rights-of-way and properties in the City. This plan should identify the vegetative species suitable for the desert climate, specify a planting strategy and costs, and identify funding mechanisms. An aggressive fund acquisition program should be pursued.

14. The City should establish architectural and urban design standards for all classes of development in the City, which would include:

    a. siting of structures and building coverage,

    b. mass relationships of structures to the site and other structures,

    c. building form and height,

    d. color,

    e. materials (structure and facade),

    f. signage,

    g. landscaping,

    h. parking and access,

    i. paving,

j. general design quality, and

k. solar access.

An architectural review committee composed of City staff and/or qualified professionals should be established to review development proposals.

15. A sign ordinance should be prepared and adopted by the City Council.

16. The City should initiate annexation feasibility analyses of areas within its planning area. First priority should be directed at the inclusion of Fox Field.

17. The City shall institute a site-specific noise analysis of the areas exposed to noise levels exceeding an L_{dn} of 65 dB(A) attributable to U.S. Air Force Plant 42 to determine the validity of the A.I.C.U.Z. study.

2. Circulation Element

2.0 Existing Circulation System

Recognizing that the currently in-place circulation system will serve as the backbone of all future improvements, this section describes the existing transportation network in the City of Lancaster.

2.1 Existing Roadway System

The primary link between the City of Lancaster and the Los Angeles Basin is the Antelope Valley Freeway (State Route 14/138). On weekends, high volumes of traffic originating in the Los Angeles Basin use the Antelope Valley Freeway to reach mountain and desert recreational areas to the north. The Antelope Valley Freeway and Sierra Highway (which parallels the Freeway through Lancaster and Palmdale) also provide access to Palmdale Airport (Lockheed and Air Force Plant 42) and Edwards Air Force Base, the two principal employment sites of Lancaster's residents.

Although not yet fully constructed, within the City itself, the basic street network comprises a regular grid system with one-mile spacing between primary arterials. Secondary arterials occur, or are planned for, at intervening half-mile spacing. Notable exceptions to the regular grid patterm are Sierra Highway and Lancaster Boulevard. Sierra Highway parallels the route of the Southern Pacific Railroad through the City, whereas Lancaster Boulevard, the City's historic "main street", jogs between 10th Street West and Division Street so as to be perpendicular to the S.P.R.R.

Local streets also generally follow the rectangular grid system, although some of the newer subdivisions are departing from this pattern with curvilinear streets being introduced.

2.1.1 Street Widths

Figure 1 depicts street widths of the existing arterials street system in Lancaster. In total, there are some 117 route miles (229 land miles) of primary and secondary arterials in the City (not including local streets). The street segments shown with variable widths (two to four lanes) reflect the ongoing dynamics of the street improvement process, particularly as it relates to construction and/or widening of streets through private development contributions.

Primary arterials generally have four to six travel lanes (alghouth many in Lancaster are still two lanes) and are

Figure 1

Circulation System

principally intended as carriers of traffic. Unlike freeways, however, they also function to directly serve abutting properties. Trip lengths on primary arterials are generally medium to long (3-10 miles). Primary arterials expedite the movement of through traffic to major traffic generators and collect and distribute traffic from freeways to secondary arterials or directly to traffic destinations. Current day volumes on primary arterials in the City of Lancaster are in the order of 5,000 to 25,000 vehicles per day. Examples of roadways which at present fit into the primary arterial category are Avenues I, J and K; 10th Street West; and Sierra Highway.

Secondary arterials, which are typically two to four lanes, occur between primary arterials to reduce their traffic loads by accommodating trips of medium length (1-5 miles). They also collect and distribute traffic from local streets to primary arterials and serve as links between adjacent neighborhoods. Volumes are generally in the 5,000 to 15,000 vehicles per day range. Examples of existing secondary arterials are 5th Street East, 15th Streets East and West, and Avenues J-8 and K-8. Because of gaps in continuity, many of the streets called for in the County Master Plan of Highways to be primary arterials are in fact functioning as secondary arterials today.

2.1.1 Existing Traffic Volumes

Figure 2 graphically summarizes existing (1979) 24-hour traffic volumes on the street network in the City of Lancaster as recorded by the County Road Department and Caltrans. As can be seen from this figure, Avenue J carries the highest volumes of any east-west street in the City (18,600 to 24,600 vehicles per day between 10th Street West and 5th Street East). Comparatively high volumes also are shown for Avenues I and K and Lancaster Boulevard.

The most heavily traveled routes in the north-south direction are 10th Street West, Sierra Highway, and Division Street. Interestingly, average daily traffic volumes on many of the above streets are higher than on the Antelope Valley Freeway.

With regard to peak hour traffic, Figures 3 and 4 present existing traffic volumes, by direction, during the morning and afternoon peak hour, respectively. Generally, the peak hour volumes as shown in Figures 3 and 4 are between 8 and 10 percent of average daily traffic. Also, for the most part, peak hour volumes tend to be fairly evenly balanced by direction. Exceptions are the lower portion of Sierra Highway, eastern portion of Avenue M, and the

2-5

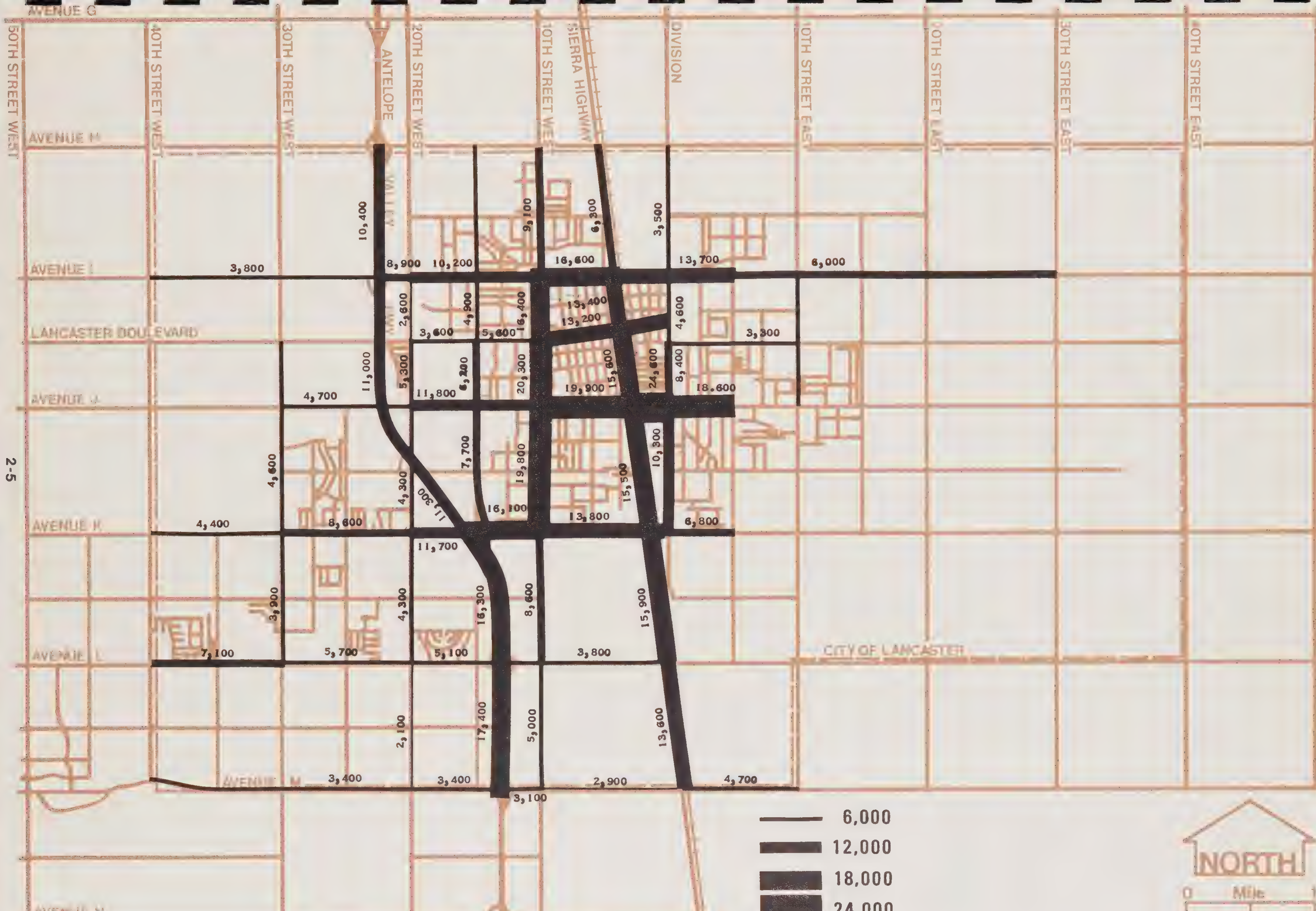


FIGURE 2

Average Daily Traffic Flow

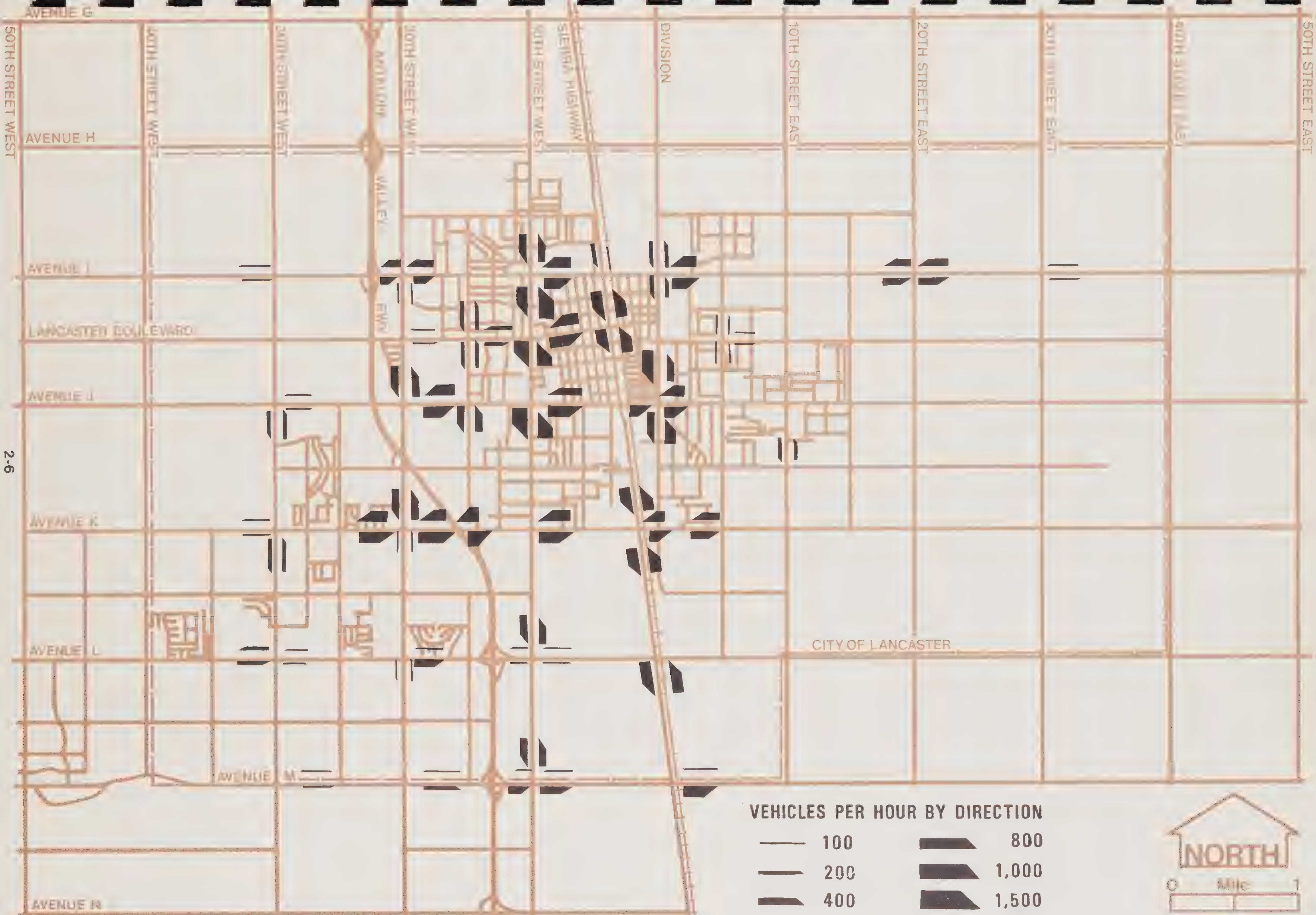


FIGURE 3

1978 am Traffic Flow

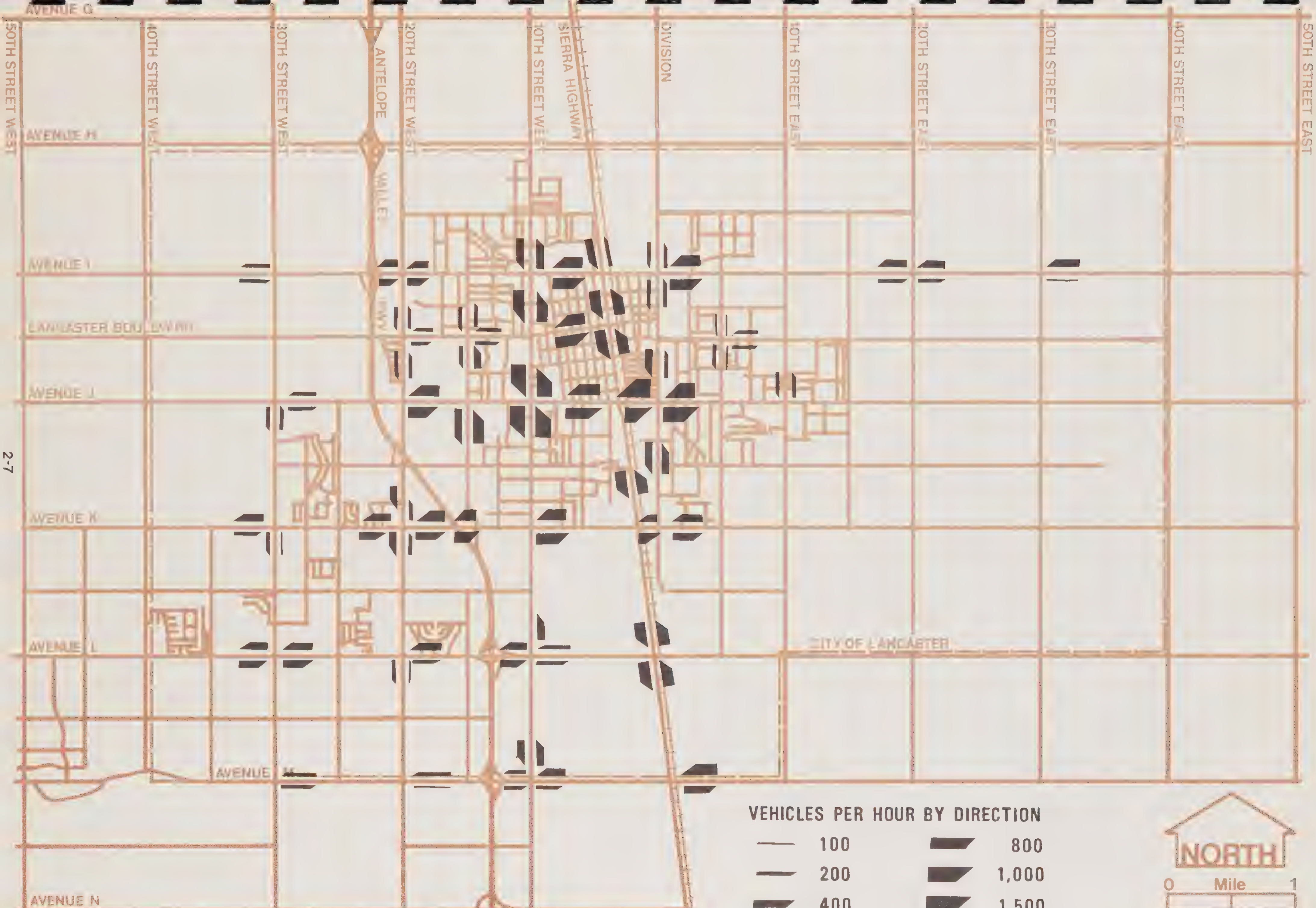


FIGURE 4

1978 pm Traffic Flow

east-west arterials in the vicinity of the Freeway on/off ramps. Volumes on these streets evidence a directional bias (although not that pronounced) toward Palmdale Airport and the Freeway in the morning, and from these locations in the afternoon. Another noticeable directional imbalance occurs on Avenue J between Sierra Highway and Division Street. (In both the morning and afternoon peak hours, volumes are considerably higher in the westbound compared to eastbound direction.) With only few exceptions, the existing roadway system is accommodating present travel demands without significant congestion. Indeed, on most streets, particulary those outside the City's core, there is already ample capacity to handle substantial increased growth. Streets which, on the other hand, are at or near their capacity limits include sections of Avenues I, J, and 10th Street West.

2.2 Truck and Rail Traffic

There are presently no designated truck routes in the City of Lancaster. Nonetheless, because of the continuity of these streets, wider pavement, and faster speeds, trucks tend to use the primary arterial system and Antelope Valley Freeway more so than secondary arterials and local roads. These latter streets are used by trucks primarily for collection and drop-off rather than for through movements. According to data collected by the County Road Department, approximately nine percent of the traffic stream on the Antelope Valley Freeway comprises trucks; five percent of the traffic on Sierra Highway is truck traffic; and about three percent of the vehicles using the primary arterial network are trucks. Therefore, with the exception of the Freeway and Sierra Highway, truck traffic tends to be a relatively small percentage of the daily traffic flow in the City.

A more troublesome problem to overall traffic flow in the City is the disruption introduced by the Southern Pacific rail line. This heavily used freight rail line (an average of 24 train movements per day, or the equivalent of one per hour) impacts the City's circulation system from a number of standpoints. First, it has restricted the number of east-west arterial crossings to only five locations (Avenues I, J, K, and M, and Lancaster Boulevard), and has thereby concentrated traffic on these streets. Secondly, since each of these five streets cross the rail line at-grade, traffic delays are experienced whenever a train movement occurs. Because each of the grade crossings is protected with gates and flashers, the accident history over the past ten years has been relatively minor. As shown in Table 2.1, a total of four accidents involving one fatality has occurred. The Southern Pacific estimates that rail traffic will more than double over the next 10-20 years.

TABLE 2.1

S.P.R.R. GRADE CROSSING ACCIDENT HISTORY
1968-1978

Location	*Number of Accidents*	*Fatalities*	*Injuries*	*Estimated Average Daily Traffic* 1978	Projected
Avenue H	(No Existing Crossing)			N.A.	5.2
Avenue I	1	1	0	16.6	45.6
Lancaster Blvd.	0	0	0	13.2	22.4
Avenue J	0	0	0	24.6	45.8
Avenue K	1	0	0	13.8	45.9
Avenue L	(No Existing Crossing)			3.7	46.7
Avenue M	2	1	0	4.6	20.0

Source of Accident Date: California Public Utilities Commission

2.3 Public Transportation

There are a variety of bus services in the City of Lancaster today. The Antelope Valley Bus Company (a private concern) offers 12 round trips per day between the City of Lancaster and Edwards Air Force Base (Main Base, NASA, G.E. or rocket range); two round trips per day between Lancaster and Lockheed in Burbank; one trip in the morning to Los Angeles International Airport, returning in the afternoon; and one round trip per day each to El Segundo and Hawthorne. Also, besides the Antelope Valley Bus Company services, Greyhound operates three round trips per day between Lancaster and Los Angeles.

In addition to the above private bus services, there are several publicly subsidized services comprising two fixed route local lines, two commuter routes, and several special school bus routes. These publicly subsidized services are being provided on a "demonstration" basis through funding by the Cities of Lancaster and Palmdale, County of Los Angeles, and Caltrans. The existing bus routes are shown in Figure 5.

Route 1 operates five days per week between Lancaster and Quartz Hill at two-hour headways, with the first trip starting at 6:38 a.m. and the final trip ending at 6:18 p.m. Route 2 operates five days per week between Lancaster and Palmdale at two-hour headways, with the first trip departing at 7:26 a.m. and the final trip arriving at 5:29 p.m.

The commuter service which just started in July of 1979 consists of one round trip per day between Lancaster and Pearlblossom, and Lancaster and Palmdale. Both commuter routes serve the Lockheed Plant at Palmdale Airport.

In addition to the above services, there are several school oriented routes which are available to the general public, including routes to and from Antelope Valley High School, Paraclete High School, and Antelope Valley College. As shown in Table 2.2, which summarizes various performance parameters for the existing transit services, current ridership, bus miles, bus hours, and subsidy levels are more on par with rural as opposed to urban transit services.

Since initiation of the demonstration project in September, 1976, bus service in the City has been expanded considerably. In 1976, 1977, and most of 1978, the demonstration service only consisted of Routes 1 and 2, with two day per week service. In 1978, Route 1 and 2 service was expanded to five days per week, and the school services

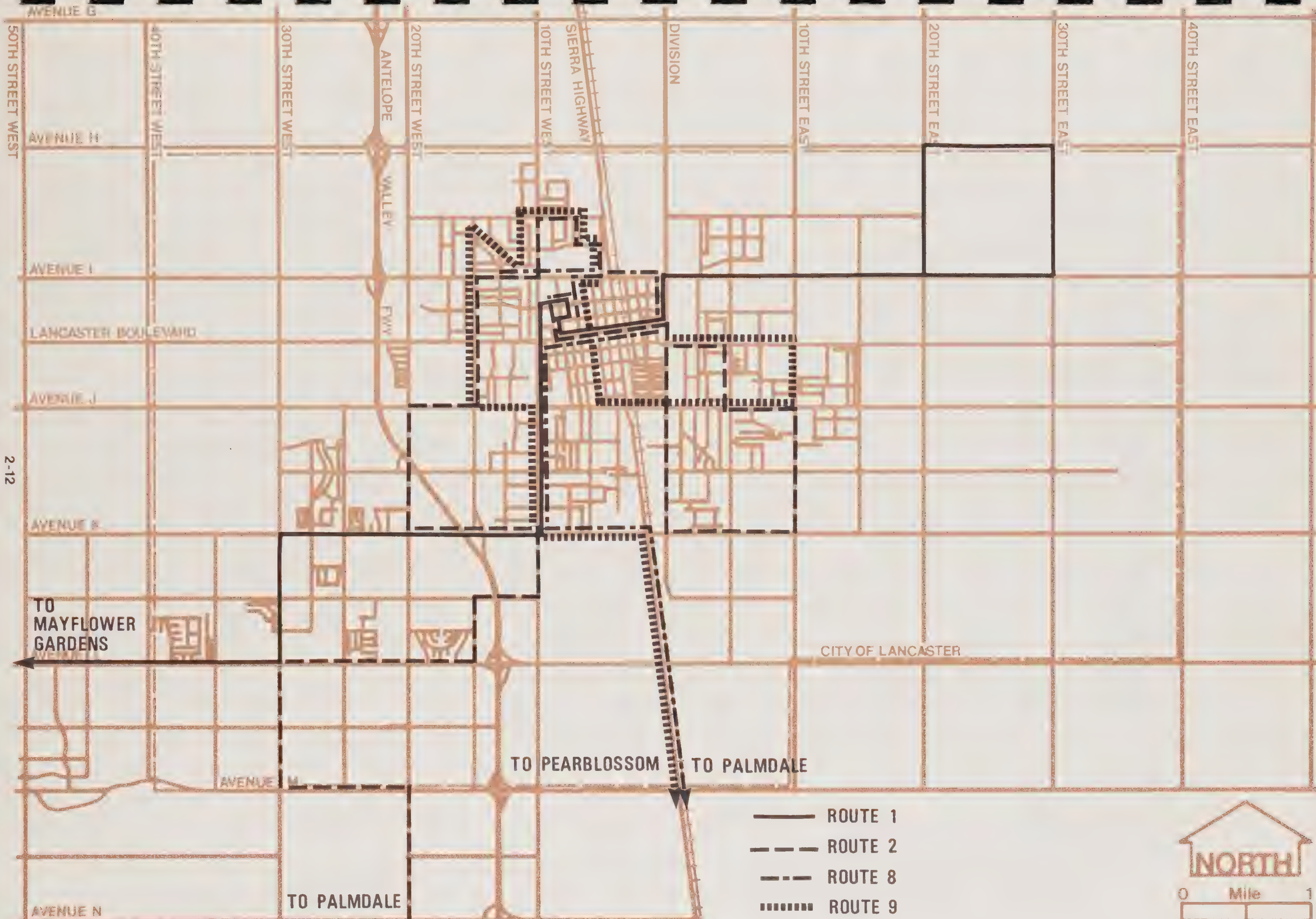


FIGURE 5

Existing Transit Routes

TABLE 2.2

PERFORMANCE STATISTICS FOR EXISTING TRANSIT SERVICES

	Fixed Route (Jan-July 1979)		*Commuter Routes (July, 1979)*	*School Routes (1978-79 School Year)*	
	Route 1	*Route 2*		*AVHS*	*Paraclete*
Ridership	32,558	22,037	63	25,697	22,463
Bus Hours	1,502	1,460	94.5	355	450
Bus Miles	29,204	31,536	2,352	5,228	9,139
Passenger/Bus Hour	21.7	15.1	0.7	72.4	49.9
Passenger/Bus Mile	1.11	0.70	0.03	4.92	2.46
Cost/Rider	$ 1.15	$ 1.72	$61.87	$ 0.53	$ 0.85
Subsidy/Rider	$ 1.03	$ 1.51	$61.72	$ 0.43	$ 0.73

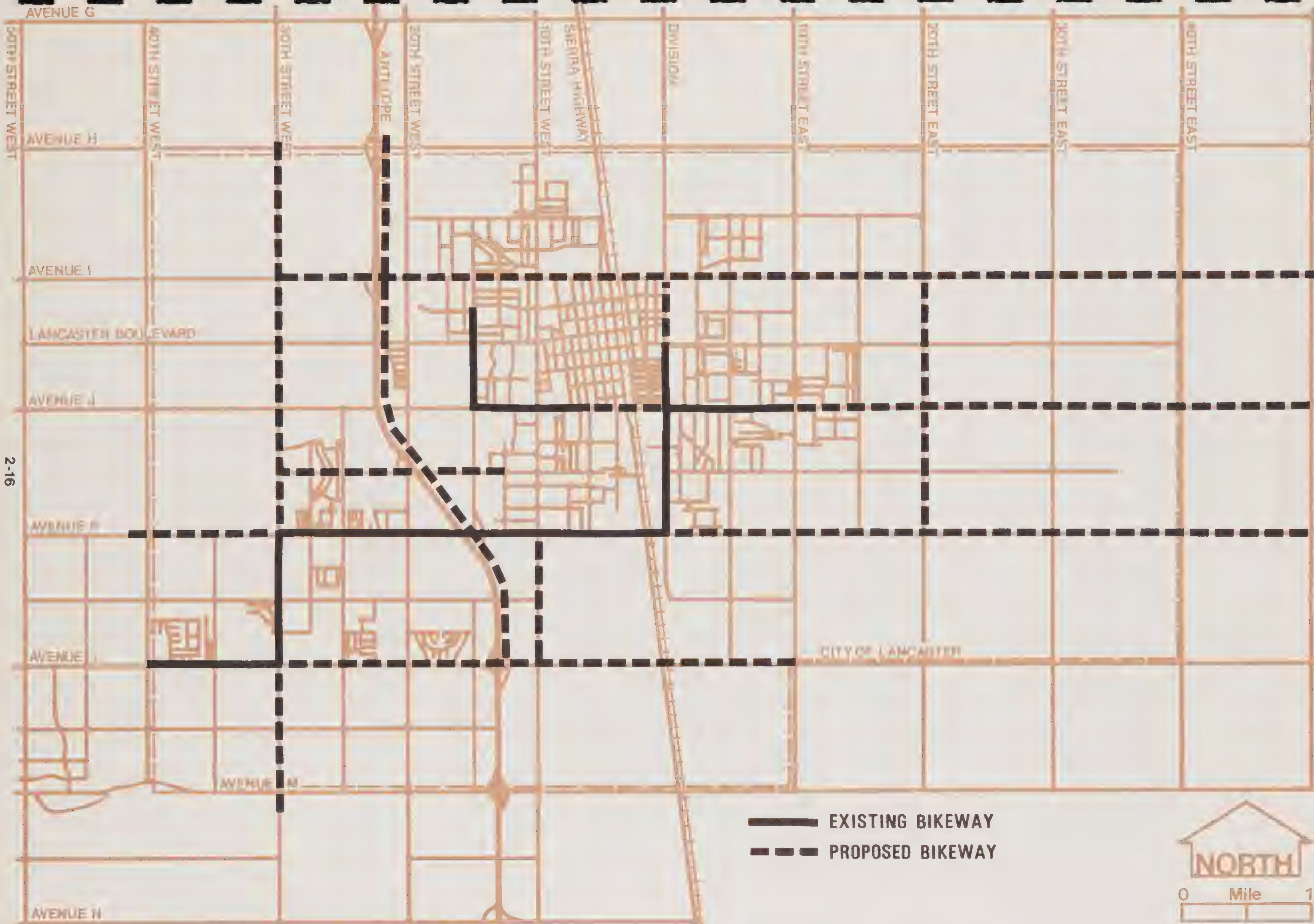
Source: County Road Department

were added. In July of 1979, the commuter routes were added to the system. It is noteworthy that the passengers per bus mile and bus hour have generally kept pace with this service expansion.

2.4 Bicycle Facilities

There are at present only a few streets in Lancaster with designated bike lanes, of a mile or more in length. These bike lanes occur on portions of Avenues L, J, and K, 30th Street West, and Division Street.

As shown in Figure 6, which reflects the City's Proposed Master Plan for Bikeways, a number of other streets have been designated as future bike route corridors. In addition to the extension of existing bike lanes on the above streets, these include portions of Avenues I and J-8, 20th Street East, and 10th Street West. The City as part of their current Parks and Recreation Master Plan is reviewing the need for additional bike routes.



Existing Bikeway Master Plan

FIGURE 6

3.0 Future Travel Demands

In preparation of the General Plan Circulation Element, modifications and refinements were made to the existing Caltrans (LARTS) regional transportation planning model system for specific applicability to the City of Lancaster. A detailed technical discussion of the model development and application procedures is presented in Appendix A of this document. A less technical overview of the modeling system used, and resultant output, are presented in this section.

3.1 Model Development Process

To test alternative future transportation networks, a computer based, systems analysis travel demand modeling system was used. The model system employed in the study built upon the regional model system developed by Caltrans, yet contained major refinements.

The first refinement concerned the need for a transporation network and model system that operated specifically at City level, without disregarding the influence of regional travel on the performance of the total transporation system. The primary advantage of such a "subregional" travel demand model is its inherent ability to provide more detailed system performance information at a considerably lower incremental investment of time and cost. This refinement included the disaggregation of travel analysis zones within the City proper to achieve the finer grain detail which is needed for Citywide vs. regional analysis. Figure 7 illustrates the 20 analysis zones used for the City.

The second aspect addressed in model development was the question of model validity. The entire model system was exposed to a rigorous set of validation tests to insure its forecasting capability. Comparisons with existing (1976 observed) information (i.e., ground counts) provided the basis for these tests.

The third refinement involved the insertion of the General Plan's land-use and socioeconomic forecasts into the modeling effort so as to test the specific circulation needs of the Land Use Element.

FIGURE 7

Analysis Zones

3.2 Socioeconomic and Travel Forecasts

To facilitate travel demand analyses, population, dwelling unit and employment estimates were prepared for base year and future (plan holding capacity) conditions. These forecasts, as shown in Tables 2.3 and 2.4, call for over a five-fold increase in population and close to a quadrupling of employment. In contrast to prior years, when the bulk of residential construction was single-family units, almost half of the new dwelling units expected to be built will be multi-family, the other half single-family units. Residential construction will comprise both suburban expansion around the presently built-up areas of the City, as well as in-fill within these built-up areas. Employment growth will, however, be most pronounced in the southeastern portion of the City.

With ultimate "build-out" of the Land Use Plan, it is estimated that some 560,800 vehicle trips with at least one trip-end (i.e., excluding through traffic) will be made to/from and within the City daily. About 444,800 of these vehicle trips, or 79%, will be wholly within the City limits (i.e., internal travel), whereas 116,000, or 21%, will be internal-external trips. The distribution of projected vehicle origins and destinations is shown in Figure 8.

TABLE 2.3

EXISTING SOCIOECONOMIC DATA

ZONE NUMBER	DWELLING UNITS SINGLE FAMILY	MULTI-FAMILY	POPULATION	EMPLOYMENT
1	10	0	30	0
2	217	0	691	60
3	21	0	69	178
4	1,144	150	3,930	80
5	26	0	82	0
6	391	0	1,252	20
7	24	0	74	0
8	1,480	0	4,634	920
9	1,382	483	5,289	3,563
10	632	348	1,348	1,200
11	1,188	622	4,848	655
12	571	0	1,827	70
13	0	76	138	135
14	4	0	14	0
15	0	0	0	0
16	363	130	1,775	60
17	1,203	366	4,507	1,920
18	957	59	3,167	600
19	473	66	1,504	180
20	0	0	0	0
21	7	974	1,754	54
22	529	0	1,845	0
23	331	0	1,058	0
24	142	72	574	0
25	101	450	496	0
26	12	0	41	0
	11,208	3,796	40,947	9,695

Note: See Figure 7 for Analysis Zones.

TABLE 2.4

PROJECTED SOCIOECONOMIC DATA

ZONE NUMBER	DWELLING UNITS SINGLE FAMILY	DWELLING UNITS MULTI-FAMILY	POPULATION	EMPLOYMENT
1	960	780	4,476	75
2	3,050	480	10,624	360
3	2,175	660	8,148	178
4	1,960	1,212	8,454	540
5	2,575	480	9,104	0
6	1,660	2,692	10,158	600
7	2,330	335	8,061	0
8	3,810	600	13,272	920
9	2,560	3,628	12,146	3,563
10	665	3,815	7,952	1,770
11	1,250	756	4,861	1,290
12	620	2,220	5,148	945
13	0	7,640	13,752	4,500
14	435	0	1,392	0
15	0	0	0	6,760
16	915	864	4,433	2,915
17	1,850	1,116	7,929	1,920
18	2,180	1,020	7,360	1,650
19	3,355	0	10,736	2,579
20	0	0	0	4,760
21	1,130	2,256	7,677	150
22	2,135	2,016	10,461	195
23	1,940	2,164	9,495	225
24	3,915	1,107	15,754	150
25	3,920	1,720	15,640	600
26	1,280	0	4,096	0
	46,670	37,561	211,129	36,645

Note: See Figure 7 for Analysis Zones.

Figure 8

Projected Travel Patterns

3.3 Future Circulation Needs

As a first step toward defining future year circulation needs, projected traffic as generated by the Land Use Element was assigned to a computer simulation network. This traffic assignment (which involved using the travel demand models described in the preceding section) highlighted specific deficiencies of both the proposed North Los Angeles County General Plan Circulation Element[1] and the "Do Nothing" alternative (i.e., existing street system).

Whereas the North Los Angeles County General Plan (as well as County Master Plan of Highways) call for excessive capacity in some places and not enough in others, the "Do Nothing" option would be clearly inadequate to serve future year travel.

Figure 9 presents future traffic projections based upon the City of Lancaster Land Use Element. Needless to say, volumes on most streets would be significantly higher than today. Overall, volumes in the east-west direction are projected to be approximately 3.5 times higher than today's traffic, and volumes would be about 2.5 times higher than today's traffic in the north-south direction.

The volumes shown in Figure 9 were translated into lane requirements using capacity limits of up to approximately 12,000 vehicles per day for a two-lane arterial; 24,000 for a four-lane arterial; and 45,000 for a six-lane arterial. The two-lane and four-lane thresholds (cut-offs) generally correspond to Level of Service "C", whereas the six-lane threshold is indicative of an "E" Level of Service.

With Level of Service "C", stable flow is maintained on an arterial, althgouh occasionally drivers may have to wait through more than one red signal. Most drivers feel somewhat restricted, but not objectionably so. Traditionally, Level of Service "C" has been used as the planning objective in most communities.

In recent years, however, due to environmental and economic constraints, some communities have opted for a compromised level of service (Level of Service "D" and "E") in planning for future roadways in built-up areas. At Level of Service "E", there may be long lines of vehicles waiting upstream of the intersection and delays may be up to several signal cycles.

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[1] North Los Angeles County General Plan, Antelope Valley, Areawide Plan and Lancaster Community Plan, Circulation Elements, Draft for Citizen Review, September 1976, Quinton-Redgate, et al.

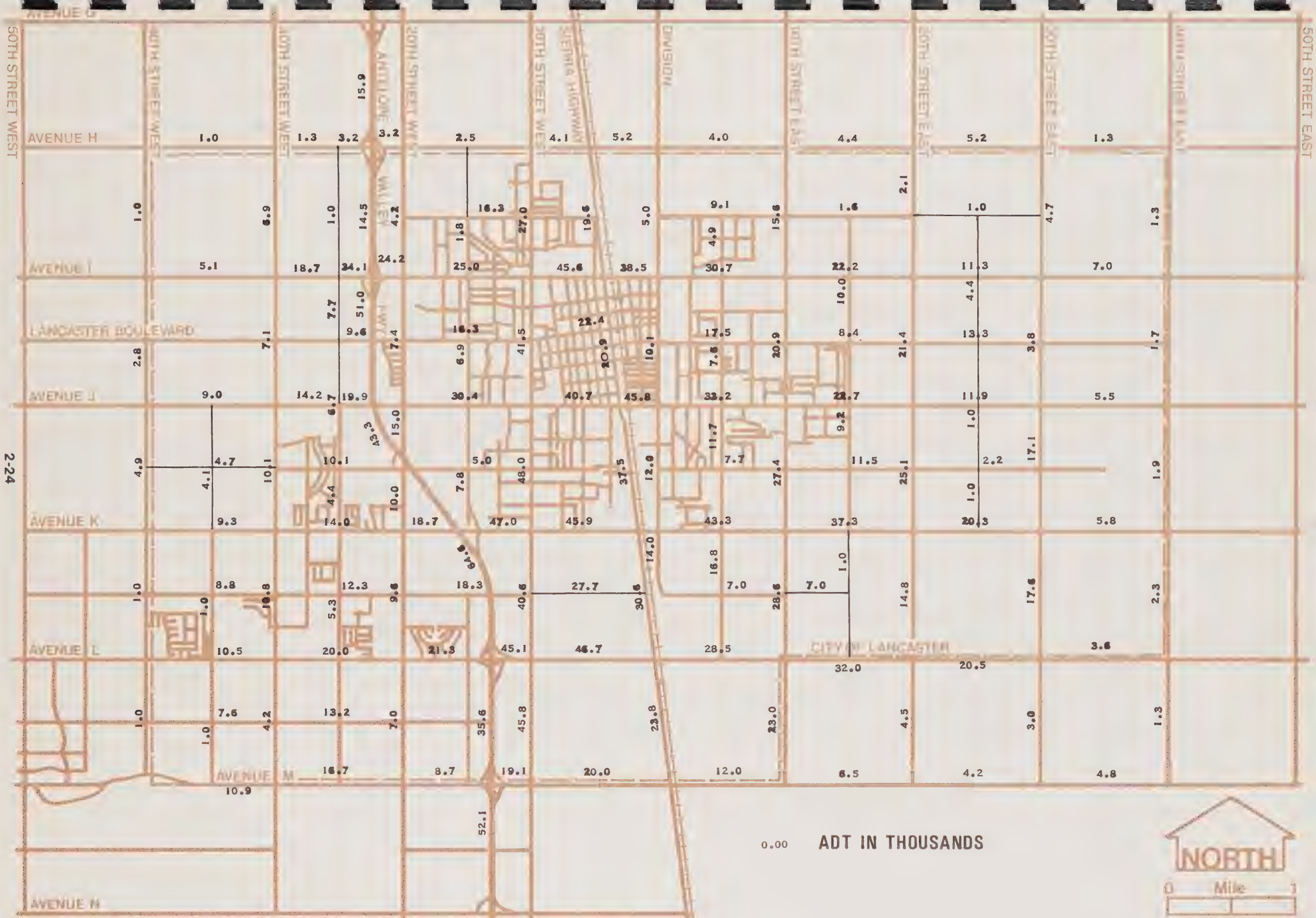


FIGURE 9

Projected Traffic

4.0 Circulation Plan

The Circulation Plan for the City of Lancaster includes (1) recommended improvements to the existing circulation system, (2) statements of policy, and (3) capital improvement funding sources.

4.1 Recommended Arterial Improvement Plan

Based upon the traffic projections, capacity criteria described above, and status of existing roadway cross-sections, Figure 10 presents the recommended arterial improvement plan for the City of Lancaster. The plan proposes some 56.6 lane miles of new roadway construction and 115.8 lane miles of roadway widening.

A number of streets would require six-lane (plus turning lane) cross-sections to accommodate future year travel demands. These include sections of Avenues I, J, K, K-8, and L, as well as 10th Street West, Sierra Highway, and 10th Street East. Table 2.3 summarizes the recommended roadway improvement program and the estimated construction cost (exclusive of right-of-way acquisition) for each of the projects.

In total, the improvements are estimated to cost approximately $45 million (in 1979 unescalated dollars). Again, this is exclusive of right-of-way acquisition which could add another $20 to $40 million to the improvement costs. Not all of these costs would in fact be borne by the City. A good portion could likely be paid for through private development contributions as has historically been the case. Other projects not built or paid for by the private sector would be eligible for State and Federal funding. Although the proposed roadway improvement plan contains slightly more six-lane roadways than the existing North County Plan (see Figure 11) overall, the proposed plan would require 17 lane miles less construction. The important difference between the two plans, however, is that the distribution of lanes in the recommended plan is responsive to the travel demands generated by the updated Land Use Element, whereas the former plan is not.

TABLE 2.5

ESTIMATED CONSTRUCTION COST
OF PROPOSED IMPROVEMENTS

TYPE OF PROJECT	*LOCATION*	*PROJECT LIMITS*	*PROJECT LENGTH (MILES)*	*ESTIMATED CONSTRUCTION COST $(000)*
New 2 Lane	Avenue H	10th St. E. to 20th St. E.	1.0	582
	Avenue H	37th St. E. to 40th St. E.	0.2	116
	Avenue H-8	Division St. to 30th St. E.	3.0	1,746
	Avenue J-8	40th St. W. to 35th St. W.	0.5	292
	Avenue J-8	Division St. to 25th St. E.	2.5	1,456
	Avenue K-8	40th St. W. to 32nd St. W.	0.8	466
	Avenue K-8	5th St. E. to 15th St. E.	1.0	582
	Avenue L	30th St. E. to 40th St. E.	1.0	582
	Avenue L-8	40th St. W. to 35th St. W.	0.5	292
	5th St. E.	Avenue J-8 to Avenue K	0.5	292
	15th St. E.	Avenue K to Avenue L	1.0	582
	15th St. W.	Avenue H to Avenue H-8	0.5	292
	25th St. E.	Avenue H-8 to Avenue K	2.5	1,456
	25th St. W.	Avenue H to Avenue J	2.0	1,164
	25th St. W.	Avenue K-8 to Avenue L-8	1.0	582
	35th St. W.	Avenue J to Avenue K-8	1.5	874
	40th St. W.	Avenue H to Avenue I	1.0	582
New 4 Lane	Avenue H	Sierra Highway to Division St.	0.6	510
	Avenue H-8	20th St. W. to 12th St. W.	0.8	582
	Avenue K-8	10th St. W. to Sierra Highway	0.9	654
	Avenue L	20th St. E. to 30th St. E.	1.0	727
	30th St. W.	Avenue K-12 to Avenue L	0.3	218
New 6 Lane	Avenue L	5th St. E. to Sierra Highway	0.5	512
	Avenue L	15th St. E. to 20th St. E.	0.5	437
Widen 2 to 4	Avenue H-8	12th St. W. to Sierra Highway	0.7	408
	Avenue I	30th St. W. to 25th St. W.	0.5	292

(Cont. next page)

TABLE 2.5

ESTIMATED CONSTRUCTION COST
OF PROPOSED IMPROVEMENTS
(Continued)

TYPE OF PROJECT	*LOCATION*	*PROJECT LIMITS*	*PROJECT LENGTH (MILES)*	*ESTIMATED CONSTRUCTION COST $(000)*
Widen 2 to 4 (Cont.)	Avenue J	30th St. W. to Fwy. 14	0.8	466
	Avenue J	10th St. E. to 30th St. E.	2.0	1,164
	Avenue K	20th St. E. to 30th St. E.	1.0	582
	Avenue K-8	20th St. W. to Fwy. 14	0.7	408
	Avenue K-8	Division St. to 5th St. E.	0.5	292
	Avenue L	40th St. W. to Fwy. 14	2.7	1,572
	Avenue M	30th St. W. to 4th St. W.	2.6	1,513
	Division St.	Avenue K to Avenue K-8	0.5	292
	Lancaster Blvd.	2nd St. E. to 10th St. E.	0.8	466
	Sierra Hwy.	Avenue H to Avenue I	1.0	582
	5th St. E.	Avenue K to Avenue K-8	0.5	292
	10th St. E.	Ave. I to Ave. J/Ave. L to Ave. M	2.0	1,164
	30th St. W.	Avenue I to Avenue M	2.2	1,280
	20th St. E.	Avenue I to Avenue L	3.0	1,746
	20th St. W.	Avenue I to Avenue L	2.3	1,339
	30th St. E.	Avenue J to Avenue L	2.0	1,164
Widen 2 to 6	Avenue I	25th St. W. to Fwy. 14	0.2	145
	Avenue K	5th St. E. to 20th St. E.	1.5	1,091
	Avenue L	Fwy. 14 to 15th St. E.	2.4	1,745
	10th St. W.	Ave. K to Ave. M/Ave. H to H-4	2.3	1,672
	10th St. E.	Avenue J to Avenue L	2.0	1,454
Widen 4 to 6	Avenue I	Fwy. 14 to 10th St. E.	3.3	1,921
	Avenue J	Fwy. 14 to 10th St. E.	3.3	1,921
	Avenue K	15th St. W. to 5th St. E.	2.0	1,164
	Sierra Hwy.	Avenue J to Avenue M	3.0	1,746
	10th St. W.	Avenue H-4 to Avenue K	2.7	1,571
TOTAL				45,030

Note: Cost estimates are in 1979 dollars, and include contingency and design at 20% of direct construction, but do not include costs of right-of-way acquisition.

Figure 10

Recommended Circulation Element

Existing General Plan

FIGURE 11

4.2 Goals and Policies

4.2.1 Goal

It shall be the goal of the City of Lancaster to provide for the efficient movement of people, goods, and services throughout the City and its planning area.

4.2.2 Objectives

It shall be the objective of the City of Lancaster to:

1. Provide access among all land uses within the City and to and from major destinations outside of the City.

2. Provide access while maintaining a high level of environmental quality.

3. Provide for the development of alternative modes of transportation.

4. Provide for the development and expansion of public transportation systems.

4.2.3 Policies

It shall be the policy of the City of Lancaster to:

Issue One: Circulation Adequacy/Accessibility

1. Provide for the efficient movement of people, goods, and services with minimal pollution and expenditure of energy and natural resources.

2. Develop a comprehensive transporation system, providing efficient access to and from all land uses.

3. Implement roadway improvements in accordance with the Master Plan of Streets and Highways as required to accommodate actual land use development and its concomitant traffic flows.

4. Coordinate and link local transporation systems with existing and planned regional systems and participate in the planning of these systems.

5. Develop transportation systems as demand occurs, or as future demand can realistically be determined.

6. Develop a five-year priority major streem improvement program with concurrent maintenance of existing roadways.

7. Improve street service and traffic safety levels through traffic engineering techniques to make full use of existing roadway capacity.

8. Periodically review current traffic volumes and the actual pattern of urban development to coordinate, program, and as necessary revise road improvements.

9. Examine the feasibility and actively support the development of railroad grade separations.

10. Develop and encourage the utilization of a peripheral loop roadway system, providing a bypass from the central City for through traffic. This route should be developed to a 120-foot right-of-way and include Avenue H, 20th Street East, Avenue L, 40th Street West, or 50th Street West (between Avenue H and Fox Field).

11. Require that parking facilities be located in relationship to their usage, i.e., short-term visits versus long-term employee parking.

12. Improve access to the central City without adversely impacting adjacent areas.

13. Develop a commercial truck routing plan for the City, isolating their travel to specific streets which will minimally impact community areas.

14. Link the City circulation network with the system to be designed for Palmdale International Airport.

15. Establish a program for uniform street lighting and signage.

16. Upgrade all hazardous intersections and roadway conditions.

<u>Issue Two: Relationship to Land Uses and the Environment</u>

1. Develop a street network which meets traffic circulation needs without sacrificing the function and quality of the City's existing and future residential neighborhoods.

2. Design street improvements considering equally the effect on aesthetic character and livability of residential neighborhoods with traffic engineering criteria.

3. Consider all alternatives for increasing street capacity before physical street widening is recommended.

4. Maintain traffic safety as an important consideration in street design.

5. Route heavy truck traffic away from residential neighborhoods.

6. Base street widths to improve traffic flow on performance criteria rather than absolute standards. A flexible approach whereby the street is designed to fit an individual situation shall prevail over the blanket application of a uniform design standard.

7. Direct through traffic from local streets to arterials and secondaries where determined necessary to (a) reduce traffic on local streets, (b) improve neighborhood safety and environmental quality, (c) facilitate business trips, and (d) improve local service.

Issue Three: Alternate Modes

1. Examine the feasibility and encourage the development of viable transportation alternatives to serve the needs of the transit dependent, improve circulation, and reduce air and noise pollution.

2. Establish, as demand warrants, a City transporation center(s) to include parking areas and access to local and regional public and private transportation systems.

3. Examine the feasibility and encourage the development of an adequate system to serve the downtown commercial, future civic center and regional commercial vicinities.

4. Promote and facilitate the use of the bicycle as an alternative transportation mode and for recreational use, through the development of a Citywide bikeway network.

5. Encourage and facilitate pedestrian movement by creating environments conducive to walking and designing development to a "human scale".

6. Encourage, through land use and building design policies and regulations, the proximity of compatible residential, commercial, and industrial land uses to provide and facilitate pedestrian travel.

Issue Four: Public Transportation

1. Encourage the continued development of public transportation systems throughout the City to increase patronage and decrease reliance on the automobile.

2. Cooperate with the County of Los Angeles and City of Palmdale in efforts to improve its service, especially in those areas which are heavily transit dependent. Particular emphasis should be placed on providing access for the elderly.

3. Seek State and Federal funding for local transit programs.

4. On development of Palmdale International Airport, provide for direct public transit linkage to and from the City.

4.3 Other Recommendations

1. The Planning Advisory Committee requested that the need for a "loop" or circumferential "expressway" be examined during the plan development process. The purpose of this facility would be to divert cross-town travel away from the City's core. While traffic projections indicate that an expressway type facility is not warranted, the concept of a smooth flowing circumferential corridor bypassing the commercial areas is nonetheless valid. In this regard it is recommended that, as growth occurs, Avenue L, 20th Street East, Avenue H, and 40th or 50th Street West be developed as limited access arterials. Along these routes, wider than standard right-of-way should be provided to permit raised median islands, and a design speed of 45 miles per hour.

2. In conjunction with the above, and to relieve traffic conditions on parallel streets, Avenues L and H would be extended at-grade across the S.P.R.R. tracks. In the long-term, both of these locations would ideally be grade-separated from the Southern Pacific tracks. Other locations which in the long-term should be grade separated, based upon project increases in auto and train traffic volumes, are the crossings of Avenues I, J, and K at the Southern Pacific rail line. The rights-of-way for these eventual grade-separations should be preserved.

3. Examination of truck count data for Lancaster leads to the conclusion that no single surface arterial in Lancaster is severely impacted, nor will be impacted, by through truck traffic. It is recommended that designated through truck routes not be considered at this time since it appears that most of the trucks in Lancaster are local service vehicles. It should, however, be a policy of Lancaster to maintain periodic counts of truck volumes on local arterials. Should the percentage of trucks increase dramatically on any arterial (above 7 percent) and this increase is accompanied by significant delays or safety problems on the arterial(s), at that time designation of specific truck routes or other goods movement measures should be considered.

4. With regard to public transportation, while it is too early to judge the recently implemented commuter services, the other existing Antelope Valley demonstration routes in Lancaster have proven themselves to be worthy of continuation. As the City, and for that matter the Antelope Valley, grows, new routes to serve areas not presently served plus improved service frequencies on

existing routes will be required. The higher densities forecast for Lancaster in the future should help to bolster transit as an alternative mode.

5. The City's proposed Bikeway Master Plan calls for a number of Class II bike lanes of areawide significance in Lancaster. Cross-sections along these designated streets should allow for exclusive bike lanes or wider than standard combined parking/bicycle lanes. In addition, safe bicycle routes to schools, parks, and other major attractors of bicycle trips should be identified and the designated streets designed accordingly.

6. Consistent with the Planning Advisory Committee's objectives, in implementing the proposed circulation element, it is recommended that street cross-sections and rights-of-way be selected to fit the individual situation rather than the blanket application of uniform standards.

4.4 Capital Improvement Funding Sources

For transportation improvement projects not paid for by private developers (private development has accounted for a good portion of the street improvements in recent years), the major sources of funds for street related improvements are the State gasoline tax and the Federal Aid Urban System Program. Funds for public transit purposes can be derived from the Local Transportation Fund (SB 325) and the Federal Urban Mass Transportation Act. Expenditures for the construction of bikeways can also be financed with SB 325 funds and from special funds made available through State legislation.

Expenditure of all federal and state funds requires prior approval of a Transportation Improvement Program (TIP) by the Los Angeles County Transportation Commission, SCAG and State and Federal Agencies.

The following is an outline of the various funding programs currently available to the City:

1. Federal Aid Urban System (FAU). Funds are apportioned by the State to the urbanized area of the County. Funds are then obligated for individual projects within the urbanized area of the County based upon a priority ranking. Funds must currently be matched on an 83% Federal, 17% local ratio.

2. Federal Highway Safety Act. Under the act, the City is eligible to participate in the following programs: High Hazard Safety, Roadside Obstacles, Railroad Grade Crossing Protection and the Safer Off-Systems Roads program.

3. State Grade Separation Fund. This fund is administered by the State and furnishes approximately 80% of the cost of specific grade separation projects submitted to the State Public Utilities Commission and to Caltrans. Additional funds must be furnished by the railroad in the amount of 10% and by the City in the amount of 10%.

4. The Grade Crossing Improvement Fund. This fund is administered by the State and furnishes 50% of the City's cost of upgrading crossing protection at specific locations approved by the Public Utilities Commission. Since most railroad crossing protection is now being installed with federal participation, the State legislature has not provided funds for this program during the past several years. Applications for funding are being held by the PUC to await funding or to await a decision on whether the program will be discontinued.

5. Gas Tax. This tax is a State-administered subvention to the City of a portion of the tax collected on gasoline. These funds are expected to provide the main support for the City's street construction program. These funds may also be used for street maintenance.

6. Quarter-cent Sales Tax (SB 325). Funds obtained through this source must be used for public transportation and for right-of-way acquisition and construction of major streets and roads. Funds may only be expended for public transportation purposes unless there are no "unmet" transit needs within the jurisdiction. The SB-325 funds can be used to defray operating as well as capital costs of transit services in the City (Federal UMTA monies can also be used for both capital and operating expenses).

3. Housing Element

1.0 Introduction

The availability of decent housing and a suitable living environment for all segments of a community, particularly for low-income and minority groups, has been of increasing concern to government at the local, state and national levels. This concern is most forcefully demonstrated by the statutory mandate of Section 65302(c) of the California Government Code which requires a Housing Element as a mandatory part of any adopted General Plan. In turn, the U.S. Department of Housing and Urban Development requires an adopted Housing Element as a mandatory prerequisite to participation in many federally funded projects. The Housing Element Guidelines prescribed by the State Department of Housing and Community Development as adopted in November, 1977 (California Administrative Code, Section 6400, Division 25), obligate the City to revise its Housing Element consistent with the new regulations.

This revised Housing Element discusses recent population and housing trends, assesses current and forecasted housing needs, sets forth a statement of goals and policies to guide public action, and provides a strategy and action plan. The Element is not intended as an exhaustive statement or permanent document. It will be renewed when necessary to reflect changing conditions and needs.

This Housing Element is intended to provide a framework which focuses on two fundamental components of the local planning effort:

1. The evaluation of all economic segments of the community.

2. The development of a housing program which makes adequate provision for these identified needs.

The evaluation of housing need is to consist of an analysis of the capacity of the existing housing supply to provide all economic segments of the community with decent housing which:

1. Is structurally sound, water-tight and weather-tight, with adequate cooking and plumbing facilities, heat, light and ventilation.

2. Contains enough rooms to provide reasonable privacy for its occupants.

3. Is within the economic means of the households which occupy it.

4. Is not unavailable because of discriminatory practices.

5. Is situated in an environment which does not endanger the health, safety or well-being of its occupants, and which provides convenient access to employment as well as adequate services and facilities.

This Housing Element was prepared to insure consistency with policies contained in other General Plan Elements. The Housing Element is closely linked to the Land Use and Circulation Elements. An awareness of the interrelationships between these Elements is crucial to a complete understanding of the Housing Element. The Land Use and Circulation Elements both describe activities that are totally related to land. For example, the Land Use Element is a synthesis of technical data: high noise areas, seismically dangerous areas, flood plains, desirable commercial and industrial districts, and land areas requiring protection against certain urban land uses. This Element takes into account all other Elements. The Land Use Element provides the overall framework within which the pattern of development is described.

The Circulation Element responds to this pattern of development, and it, in turn, adds to this pattern through the consideration of existing road and highway networks. The Housing Element, in contrast, takes into account more than the placement of housing on land, and adequacy of housing is judged from many viewpoints.

Housing is judged by much more than the amount of land it occupies, and these considerations are the primary focus of this Element. The Land Use Element deals almost exclusively with land-based allocation of housing units. These units, and the acreage amounts discussed in the Land Use Element, are further developed in the Housing Element, but in this Element, more emphasis is placed on the policies required to achieve desirable social goals.

This document is divided into several sections. Section 2.0 is a description of the population characteristics. Section 3.0 is a description of the household characteristics, and section 4.0 describes housing characteristics. Section 5.0 discusses data related to the housing needs of present and future populations, and section 6.0 discusses the constraints encountered in meeting these needs. Section 7.0 is the Housing Program. It is divided into three parts: Goals, Policies, and Priorities;

Implementation; and Program Types. Section 8.0 discusses other topics such as public participation, intergovernmental coordination, consistency with other General Plan elements, and other miscellaneous topics.

2.0 Population Characteristics

2.1 Total Population

Substantial population growth has occurred in the past few decades in the City of Lancaster. The impact of new defense spending at Air Force Plant 42 and Edwards Air Force Base during the 1950s changed the complexion of the Antelope Valley from an agricultural base to a defense/aerospace economic base. The chart below indicates this growth.

Population Growth

Year	Lancaster	Antelope Valley
1940		10,734
1950		20,270
1960	31,503	68,170
1970	33,460	83,540
1973	41,347	87,874

At the time of its incorporation on November 22, 1977, the City had 45,442 residents according to the first estimated population by the Los Angeles County Department of Regional Planning. This is an increase of 44.35% in seven years.

Table 3.1 shows the estimated population for the Lancaster corporate limits and annual increases from 1970 to 1979. The large differences in growth rates are attributable to the fluctuations in the local aerospace industry. Single year growth has been as high as 7.6% and as low as -3.5%.

Table 3.2 shows the population distribution in the City by census tract. A number of these tracts extend beyond the City's limits. Census tracts are shown on Figure 1.

TABLE 3.1

CITY OF LANCASTER
TOTAL POPULATION

Year	*Estimated Population*	*Annual Increase*	*10-Year Increase*
1960	31,503		19%
1970	33,460		
1971	37,488	1.2	
1972	40,337	7.6	
1973	41,347	2.5	
1974	43,502	5.2	
1975	42,027	-3.5	
1976	43,433	3.3	
1977	44,044	1.4	
1978	45,442	3.2	21%
1979	48,413	6.5	

Source: County of Los Angeles, Department of Regional Planning, Quarterly Bulletin on Population and Dwelling Units - Envicom Corporation.

TABLE 3.2

CITY OF LANCASTER
POPULATION BY CENSUS TRACT
1970

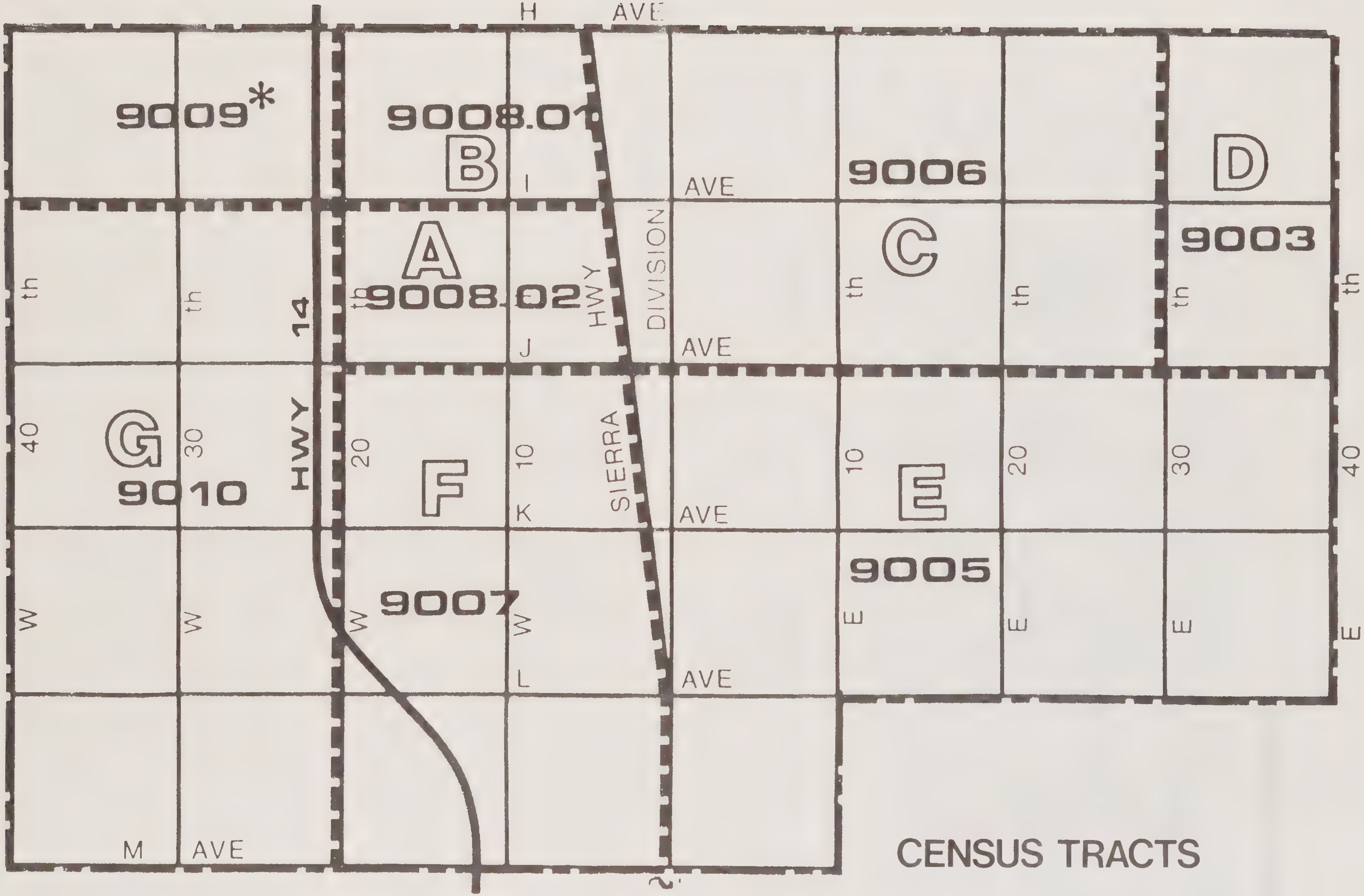
Census Tract	*Population*
9003[a)]	532
9005	3,937
9006	7,069
9007	6,821
9008.01	4,929
9008.02	6,469
9009[b)]	20
9010	1,723

Source: 1970 Census.

[a)] 52.6% of tract concerns Lancaster, based on 1970 census of housing units. Data reported is 52.6% of total census tract.

[b)] Only 5.5% of this tract is within the City. In 1970, the census reported seven housing units in the area now in the City. Population figure is estimated.

Figure 1



*Although within the Lancaster city boundaries, this census tract is excluded for two reasons: 1) Only seven housing units were reported in the 1970 Census and 2) Only 5.5% of the entire tract in the City.

2.2 Future Population

Table 3.3 shows four population forecasts for the City of Lancaster. The Series E-O utilizes a low fertility rate and assumes no population migration into the State of California. Given these conditions, along with no growth of the Palmdale International Airport, the population growth is the lowest of the four forecasts. That is, Lancaster would grow from 45,365 in 1979 to 73,132 in 2000, a 61% growth in 21 years. This is an average annual increase of 2.3%. The other extreme for Lancaster's population in 2000 is the Series D-150 forecast, and the development of Palmdale International Airport. The higher fertility rate, immigration to the State of 150,000 persons/year, and the increased employment because of the airport, would result in a population of 164,118 in 2000. This is more than double the low range forecast.

TABLE 3.3

CITY OF LANCASTER POPULATION FORECAST

Year	*Series E-O* *Annual % Increase: 2.3* *Population w/o PMD*[1]	*Population w/PMD*[1]	*Series D-150* *Annual % Increase: 5.2* *Population w/o PMD*[1]	*Population w/PMD*[1]
1979	45,365	45,365	45,365	45,365
1980	46,408	46,408	47,724	47,724
1985	51,997	51,997	61,492	61,492
1990	58,258	63,418	79,231	84,391
1995	65,273	79,133	102,088	115,948
2000	73,132	105,712	131,538	164,118

Source: Envicom Corporation.

[1] PMD refers to Palmdale International Airport.

2.3 Persons in Group Quarters

There are no persons living in group quarters within the City of Lancaster. The Los Angeles County Detention facility at Mira Loma is outside the City to the west, and Antelope Valley Community College offers no student housing.

2.4 Age of Population

In 1970, the age structure of Lancaster indicated a few characteristics of the area that are distinct from that of the whole of Los Angeles County. The percent of the total population between 0 and 19 is 40.4%, whereas it is 35.3% for the County. This indicates either a large number of moderate size families or a smaller number of large families. In the age bracket from 20 to 34, the area has less than the County averages, reflecting the out-migration of children for college and more attractive carreer opportunities. Further, the City experiences a higher than average percentage in the 35 to 54 age group. Lancaster does not seem to attract a retirement population, as the percentage of persons over 65 is 3% less than that of the County.

The City has a slightly larger female (50.9%) population than male population.

Table 3.4 shows the age structure of the City of Lancaster as compared with that of the whole of Los Angeles County.

TABLE 3.4

AGE STRUCTURE
April 1, 1970

Age Category	*Total 1970*	*1970 Percent*	*Los Angeles County Percent*
Under 5	2,737	8.3	8.3
5-9	3,469	10.5	9.2
10-14	4,011	12.1	9.3
15-19	3,191	9.6	8.6
20-24	2,182	6.6	8.3
25-34	4,163	12.6	13.7
35-44	4,333	13.1	12.0
45-54	4,318	13.0	12.2
55-59	1,483	7.4	9.0
60-64	1,063		
65-74	1,385	4.2	5.6
75 and over	799	2.4	3.6

Source: Southern California Edison. (Population totals include areas outside of Lancaster that were included in 1970 census tract definitions.)

2.5 Ethnic Characteristics

The racial composition of the community is predominantly White, with a small Black and Spanish population. These groups are somewhat dispersed throughout the City, as is shown on Table 3.5. The Black population as a percent of the total census tract population varies from 4.2% to 0.8%, and the Spanish population varies from 2.2% to 0.5%. The totals for the City are: White, 96.8%; Black, 1.8%; and Spanish/other, 1.4%.

TABLE 3.5

CITY OF LANCASTER
ETHNIC CHARACTERISTICS
1970 CENSUS

Census Tract	Total Population	White Total	White Percent	Black Total	Black Percent	Spanish/Others Total	Spanish/Others Percent
9003	532	507	95.3	17	3.2	8	1.5
9005	3,937	3,814	96.9	66	1.7	57	1.4
9006	7,069	6,864	97.1	91	1.3	114	1.6
9007	6,921	6,584	96.5	91	1.3	146	2.2
9008.01	4,929	4,671	94.8	209	4.2	49	1.0
9008.02	6,469	6,348	98.1	49	0.8	72	1.1
9010	1,723	1,677	97.3	38	2.2	8	0.5

Source: City of Lancaster Housing Assistance Plan, Urban Futures, Inc.

2.6 Educational Characteristics

Although census data concerning education may not seem directly relevant in a document defining housing needs, the level of educational attainment is an important factor in determining the overall economic characteristics of Lancaster residents. Such data can also be a reliable indicator reflecting the adequacy of educational opportunities, as well as the degree of education required for employment in and about the City.

Referring to the Educational Attainment Table (Table 3.6) on the following page, 67.1 percent of Lancaster residents, 25 years or older, have completed high school, compared with only 62 percent of the Los Angeles County residents. The median number of school years completed for the City's residents is 12.4, equalling that of Los Angeles County residents.

Six of the seven census tracts compared favorably with the County. The area with the highest figures for the percentage of high school graduates and median school years completed was census tract 9010, with scores of 76.5 percent and 12.9 years completed, respectively. This tract includes Antelope Valley College and is the site of new housing.

On the other hand, the area with by far the lowest educational attainmental was census tract 9003, with only 42.9 percent of its residents having completed high school.

Educational attainment between ethnic minority groups in Lancaster compared favorably, as shown in the table below.

Educational Attainment - 1970
Lancaster Residents Over 25 Years Old

	City	Spanish	Black
Median School Years Completed	12.4	12.4	12.1
Percent High School Graduates	67.1%	63.9%	53%

TABLE 3.6

CITY OF LANCASTER
EDUCATIONAL ATTAINMENT
BY CENSUS TRACT

	9008.02	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*City Total*
All Persons, 25 years and older	1,854	3,127	3,547	362	2,012	3,584	731	17,217
No School Years Completed	15	-	4	-	5	6	-	30
Some Degree of Elementary School Completed	612	326	410	102	345	464	71	2,330
Some Degree of High School Completed	1,941	1,963	1,972	209	1,055	1,971	313	9,424
College - 1 year or more	1,286	838	1,161	51	607	1,143	347	5,433
Median School Years Completed	12.5	12.5	12.5	11.3	12.4	12.6	12.9	12.4
Percent High School Graduates	67.8%	72.5%	70.8%	42.9%	66.2%	72.8%	76.5%	67.1%

Source: Lancaster Housing Assistance Plan, 1970 Census.

2.7 Employment Characteristics

Lancaster's civilian labor force, comprised of persons 16 years old and older, totalled 13,081 in the 1970 Census. Of this total, 837 persons were unemployed, accounting for 6.4 percent of the 1970 work force.

Table 3.7 reveals the largest percentage of the City's civilian labor force was employed in the professional, technical and kindred fields accounting for 19.6 percent. Also constituting large percentages of the labor force were the clerical and kindred fields and the craftsmen, foremen and kindred fields, accounting for 15.5 percent and 15.9 percent, respectively.

Overall, approximately half (51.5%) of the 1970 civilian labor force was employed in what may be classified as "white collar" positions. A large percentage of these residents was employed in the aerospace industries located in the Antelope Valley area. The employment situation in Lancaster could experience an enormous boom if Palmdale International Airport is constructed. This would bring, by planning departments' estimates, approximately another 30,000 more jobs in 1995 into the area.

Forecasts of future employment levels by industrial category were propared by Southern California Edison for the entire Antelope Valley area. Without the airport, employment was forecast to increase 43% from 1970 to 2000. The greatest absolute changes are expected in manufacturing, services, and government. With the airport, substantial increases would occur in manufacturing, transportation-communications-utilities, trade and services.

TABLE 3.7

EMPLOYMENT CHARACTERISTICS OF LANCASTER
BY OCCUPATION CATEGORY
1970 CENSUS

Occupation	*Total Employed**	*Percent of Labor Force*
Professional, Technical and Kindred	2,568	19.6%
Managers and Administrators	1,131	8.6%
Sales Workers	1,016	7.8%
Clerical and Kindred	2,025	15.5%
Craftsmen, Foremen and Kindred	2,084	15.9%
Operatives, Except Transport	923	7.1%
Transport Equipment Operatives	439	3.3%
Laborers	414	3.2%
Farm Workers	49	.4%
Private Household Workers	131	1.0%
Service Workers	1,464	11.2%
TOTAL EMPLOYED:	12,244	93.6%
TOTAL UNEMPLOYED:	837	6.4%
TOTAL CIVILIAN LABOR FORCE:	13,081	100%

*16 years old and older.

Source: 1970 Census.

2.8 Family Income Characteristics

Table 2.8.1 shows the 1970 family income by census tract for the City of Lancaster. This information is important in a determination of the price of housing that can be afforded by residents. The City's population is relatively affluent, with a median family income of $11,651, or 6.2% greater than the County median of $10,972 in 1970. Three of the seven census tracts had median incomes less than that of Los Angeles County.

The highest median income in 1970 was reported in census tract 9010. It was $15,274, or 39.2% greater than the County. The lowest median income in 1970 was reported for tract 9003 and was $8,278, or 24.5% below the County median. However, tract 9003 includes large portions of the desert outside the City, and it cannot be determined what the median income is for residents of the tract within the City. For census tracts completely within the City, tract 9008.01, an older portion of the central City, has the lowest median income of $10,901, or 1.6% below the County median.

Of the 8,413 households in Lancaster, 7.6% (638) have incomes below the poverty level. This level is 80% of the County median of $10,972, which is $8,778.

Table 3.8 from the Housing Assistance Plan shows the largest concentration of poverty in tract 9003 (20.3%), followed by tract 9005 (8.9%).

TABLE 3.8

FAMILY INCOME BY CENSUS TRACT - 1970

Income Levels	*9008.02*	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*CITY*
Less than $5,000	253/14.5%	221/13.2%	209/12.0%	62/34.1%	127/12.4%	216/12.6%	24/7.0%	1,112/13.2%
$5,000 - $10,000	349/20.0%	514/30.8%	348/26.2%	50/27.5%	303/29.7%	407/23.8%	43/12.6%	2,124/25.2%
$10,000 - $15,000	502/28.8%	551/33.0%	573/32.8%	45/24.7%	346/33.9%	470/33.4%	100/29.2%	2,687/32.0%
$15,000 - $25,000	444/25.4%	330/19.7%	423/24.2%	22/12.1%	230/22.5%	412/24.1%	146/42.7%	2,007/23.9%
$25,000 - $50,000	174/10.0%	55/3.3%	72/4.2%	3/1.6%	15/1.5%	88/5.2%	24/7.0%	431/5.1%
$50,000 and above	22/13.0%	0/0%	10/.6%	0/0%	0/0%	15/.9%	5/1.5%	52/.6%
TOTAL FAMILIES:	1,744	1,671	1,745	182	1,021	1,708	342	8,431
MEDIAN INCOME:	$12,725	$10,801	$11,631	$8,278	$10,925	$11,925	$15,274	$11,651
RANKING:	2	6	4	7	5	3	1	-
PERCENT BELOW POVERTY LEVEL:	6.7%	8.4%	5.7%	20.3%	8.9%	7.6%	7.0%	7.6%

Source: 1970 Census.

2.9 Handicapped Residents

Current accurate data regarding the handicapped is difficult and often impossible to obtain. Urban Futures, Inc., in their preparation of the Housing Assistance Plan (March, 1979), contacted the State Department of Rehabilitation (DOR) and made estimates based on their data. Although DOR could provide data on Los Angeles County for 1975, more refined data for Lancaster was unavailable.

The 1975 total population was estimated by the Los Angeles County Department of Regional Planning to be 42,027. It was assumed that the percentage of handicapped residents in Lancaster was the same as for the entire County. This method produces undependable estimates on the number of handicapped/disabled residents between the ages of 16 and 64 in Lancaster, as illustrated on Table 3.9.

Additional information on disabled residents is being prepared by SCAG and will be included in a later draft of this document.

TABLE 3.9

ESTIMATED HANDICAPPED POPULATION

	Los Angeles County	*Lancaster*
Estimated 1975 Population	6,939,000	42,027
Sensory Disorders	130,630	791
Physical Disorders	671,900	4,069
Mental Disorders	564,517	3,419
TOTAL DISABLED:	1,367,047	8,279

3.0 Household Characteristics

3.1 Total Households

In 1970, there were 9,678 occupied dwelling units in Lancaster. This is the total number of households in the City. The census reports that 8,413 of these units were occupied by families, which is a head of household and another individual or dependents. There were 10,173 total units.

In 1978, Urban Futures, Inc., found 16,082 dwelling units in the City. Using the same ratio of families to occupied units, the number of families in 1978 is 13,980.

3.2 Total Households—1985

Envicom Corporation has projected the 1985 population of Lancaster to range from 51,997 to 61,492. The range is determined by different fertility rates and immigration rates. The low end increase would add 2,018 households to the City of Lancaster. The upper limit forecast would add 4,972 housing units to the City.

3.3 Average Household Size

In 1970, the average household size in Lancaster was 3.25 persons per dwelling unit. In 1978, the population was estimated by the Department of Regional Planning to be 45,442, and the total housing units survey by Urban Futures was 16,082. The 1978 household size was 2.83. This is a 13% decrease in population per dwelling unit in an eight-year period, and follows a similar pattern found throughout Los Angeles County.

3.4 Large Families

Exact data on the number of large families is not available at this time for the City of Lancaster. In 1975, the Regional Housing Analysis Model published by SCAG indicated there were 2,602 large families out of a total of 10,878 households in Regional Statistical Area 10. Large families are households with five or more persons.

Regional Statistical Area 10 includes the Lancaster area as well as Palmdale. Assuming the same ratio exists for Lancaster as for the larger area, the number of large families can be estimated. The population in 1975 for Lancaster was 42,027, with a persons per household ratio of 3.00. Therefore, there were 14,009 households, of which 3,351 would be considered large. Since family size was declining from 1970 to 1975, it is inaccurate to use the same ratio of large families to total households for both years. This method probably causes an overestimation of the number of large families.

3.5 Elderly Residents

In 1970, the Census reported that approximately 6.25 percent of Lancaster's residents were 65 years or older. The following table puts into perspective the City's moderately low percentage of elderly persons as compared to the State and Los Angeles Region in 1970:

	Percent 65 and Over
California	9.0%
Los Angeles-Long Beach SMSA	9.3%
Los Angeles-Long Beach Urban Area	8.8%
Lancaster	6.2%

There is a lack of recent data pertaining to the elderly that is reported by individual census tracts. However, excluding any gradual or undetected migration of seniors in or out of the area, we can rely on 1970 Census data to give us a reasonably accurate count of the elderly in Lancaster.

As seen in Table 3.10, census tracts 9009.02 and 9003 had the largest percentages of elderly people in the City at 10.5%. In absolute numbers, census tract 9008.02 had the largest population of elderly (680), followed by tract 9007 (406) and tract 9006 (302). Only in tracts 9008.02 and 9003 did the percentage of elderly exceed the Los Angeles/Long Beach SMSA percentage of 9.3%.

TABLE 3.10

ELDERLY RESIDENTS BY CENSUS TRACTS
1970

	Tract No.							City
	9008.02	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*Total*
Number of Persons 65 Years and Older	680	282	302	56	201	406	40	1,967
Total Population	6,469	4,929	7,069	532	3,937	6,821	1,723	31,480
Percentage of Elderly	10.5%	5.7%	4.3%	10.5%	5.1%	6.0%	2.3%	6.25%
Number of Elderly Below Poverty Level	134	50	13	45	48	45	25	360
Percent of Elderly Below Poverty Level	19.7%	17.7%	4.3%	80.4%	23.9%	11.1%	62.5%	18.3%

Source: Housing Assistance Plan, Urban Futures, Inc., 1979.
U.S. Census, 1970.

3.6 Female-Head-of-Household Families

In 1970, 8.2 percent of the total families were female-headed. Of these female-headed families, almost 40 percent earned incomes below the poverty level while supporting children under 18 years old.

Female-head-of-household families are more often than not prime targets for some form of financial/housing assistance, particularly elderly female-headed households or those with children to support. The vast majority of elderly persons have only a small, fixed income on which to survive, ususally social security payments. If the husband of an elderly couple dies, the wife is left not only with the maintenance of the home, but also with the mortgage payments or rent. Although her housing costs are the same, her monthly income is cut to at least half of what they were both receiving before her husband's death, creating a financial burden. On the other hand, the woman who has children to support must have a full-time job to make ends meet, especially difficult in today's inflated economy. Her children must be left with a full-time babysitter, a major expense besides the necessities of raising children.

Table 3.11 presents 1970 data on female-head-of-household families by census tract.

TABLE 3.11

FEMALE-HEAD-OF-HOUSEHOLD FAMILIES
1970

	Tract No.							
	9008.02	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*CITY*
All Families	1,744	1,671	1,745	182	1,021	1,708	342	8,413
Female Head-of-Household Families	171	135	156	15	81	118	16	692 (8.2%)
With Children Under 18 Years	106	100	124	9	63	81	13	492 (5.9%)
Mean Number of Children	1.8	2.3	2.2	2.2	2.2	2.1	2.7	2.2
Families with Female Head Below Poverty Level	65	85	48	14	37	38	9	292 (45.7%)*
Familes Below Poverty Level	117	141	99	37	91	129	24	638
With Children Under 18 Years	57	80	48	9	27	38	9	268 (42.0%)*
Mean Number of Children	1.9	3.4	2.4	2.3	4.3	2.2	2.8	2.8

*Percent as compared to total families below poverty level.

Source: 1970 Census.

3.7 Overcrowding

A factor that is often related to substandard housing units and often has a deteriorating influence on the neighborhood is the degree of overcrowding in residential structures. An overcrowded unit is defined as one in which the number of persons residing exceeds 1.01 persons per room. Table 3.12 breaks down the number of overcrowded units in 1970 by housing areas to indicate the general locations of problem spots in the City.

The overcrowding of dwelling units appears to be a major housing problem in Lancaster. Of the total housing units in the City, 6.2 percent reported some degree of overcrowding in the 1970 Census, a situation that probably has not improved since then. Also, the census information pertaining to overcrowded conditions is usually below the actual number of such units due to the unwillingness of some people to voluntarily respond with accurate data. In many cases, this is due to unit occupation by undocumented aliens or welfare recipients living in an illegal, unqualifying situtation. Whatever the reasons for the discrepancy in unit count, the reported numbers indicate a problem with overcrowded units in Lancaster.

City-wide, one out of every 16 housing units was overcrowded. The census tract with the highest degree of overcrowding is 9003, where one out of every ten units, or 9.73 percent of the total, is in fault. Even in census tract 9008.02, where the problem appears to be the least serious, one out of every 20 houses is considered overcrowded.

Since the 1970 census, there has been a significant reduction in school-age children, as reflected in declining school enrollments. Consequently, it can be assumed that the overcrowding conditions have been lessened somewhat.

TABLE 3.12

OVERCROWDED UNITS BY CENSUS TRACT

Census Tract	*Total Occupied Units*	*1.0 or More Persons Per Room*	*Percent of Total Units Overcrowded*
9008.02	2,341	109	4.66%
9008.01	1,463	102	7.0%
9006	2,119	136	6.42%
9003	185	18	9.73%
9005	1,149	82	7.13%
9007	1,964	124	6.31%
9010	456	27	5.92%
CITY	9,677	598	6.2%

Source: 1970 Census.

3.8 Persons, Families and Households Below Poverty Level

The 1970 census reported that 10.3 percent of Lancaster's residents, one out of every ten persons, earned incomes below the poverty level. Every four out of five of those persons were family members, and almost 20 percent of the total persons below poverty level were elderly residents. There is little to show that this situation has changed today; in fact, due to the increase in population unmatched by commensurate employment opportunities, the raw numbers have probably increased.

City-wide, 7.6 percent of the total families were below the poverty level, and of those lower-income families, four out of five (80%) had children under 18 years of age. Most of the remaining families below the poverty level were headed by elderly persons (13% of the total). Almost half of the total families below the poverty level were female-headed, with 92 percent of these female-headed families having children below the age of 18.

Usually, Housing Assistance Goals have been based on the Southern California Association of Governments' (SCAG) Regional Housing Allocation Model. This model points out existing housing stock deficiencies in all Southern California cities, enabling SCAG to determine what number of units are to be supplied by each city to meet regional needs in lower-income housing. SCAG's Fair Share Allocation Plan implements the alleviation of these housing deficiencies described in the regional model in the setting of local responsibilities and goals.

However, the Department of Housing and Urban Development (HUD), to whom this plan is submitted for approval, had determined in Feburary 1978 that SCAG's estimated regional needs were incorrect and, as a consequence, so were Los Angeles County's Regional Goals. Since Lancaster was incorporated late in 1977, SCAG had not established fair share allocation plans for Lancaster. As of this writing, SCAG has not yet established the fair share allocation for Lancaster. Therefore, the conclusions and recommendations in this Element of the General Plan are from the Housing Assistance Plan as prepared by Urban Futures, Inc., and adopted by the City in March, 1979. The Housing Assistance Plan was based on 1970 census data, strengthened by justifiable updates and projections.

The Housing Assistance Plan concluded that a number of population groups were in need of some form of housing assistance. Assuming the population characteristics of

these groups had not changed since 1970, the Housing Assistance Plan determined the percentages of total assistance to be allocated to each group. The conclusions are presented in Table 3.13, and the City's persons, families and households below poverty level in 1970, by census tract, are presented in Table 3.14.

TABLE 3.13

FAMILIES/HOUSEHOLDS TO BE AIDED

	Elderly/ Handicapped	*Small Families*	*Large Families*	*TOTAL*
All Households	20%	40%	40%	100%
Male-Headed	8%	23%	23%	54%
Female-Headed	12%	17%	17%	46%

TABLE 3.14

PERSONS, FAMILIES AND HOUSEHOLDS BELOW POVERTY LEVEL - 1970

	Census Tracts							
	9008.02	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*CITY*
PERSONS BELOW POVERTY LEVEL	621	759	484	110	520	602	155	3,251 (10.3%)*
Unrelated Individuals	229	70	99	8	63	121	42	632/19.4%**
Family Members	392	689	385	102	457	481	113	2,619/80.6%**
Elderly Persons Below Poverty Level	134	50	13	45	48	45	25	360/18.3%**
HOUSEHOLDS BELOW POVERTY LEVEL (FAMILIES & UNRELATED INDIVIDUAL HOUSEHOLDS)	250	161	157	23	132	168	61	952 (6.6%)*
Owner Occupied	80/32%	61/38%	59/38%	12/51%	68/51%	91/54%	37/60%	408/43%
Renter Occupied	170/68%	100/62%	98/62%	11/49%	64/49%	77/46%	24/40%	544/57%
FAMILIES BELOW POVERTY LEVEL	117	141	99	37	91	129	24	638 (7.6%)*
Families w/Children Under 18 Years	87	131	88	15	75	92	19	507/79.5%***
Mean Number of Children	2.3	3.5	2.4	2.3	3.8	2.6	3.4	2.9
Family Heads Over 65 Years Old	65	5	7	13	12	17	0	82/13%***
Familes w/Female Head	65	85	48	14	37	38	9	292/45.7%***
Familes w/Female Head w/ Children Under 18 Years	57	80	48	9	27	28	9	268/42.0%***
Mean Number of Children	1.9	3.4	2.4	2.3	4.3	2.2	2.8	2.8

*Percents as compared to total City population.
**Percents as compared to total persons below poverty level.
***Percents as compared to total families below poverty level.

Source: 1970 Census.

4.0 Housing Characteristics

4.1 Tenure

The 1970 Census reported that there were 10,173 dwelling units in Lancaster, of which 85.1 percent were single family units and 14.9 percent were multiple family. According to estimates by the Los Angeles County Department of Regional Planning, Lancaster at the time of its incorporation (November 22, 1977) had a total of 16,803 dwelling units. Single family units accounted for 78.7 percent of all units, while multiple units and mobile homes accounted for 10.0 percent and 11.3 percent, respectively.

The actual housing unit count from the 1978 Housing Survey conducted by Urban Futures, Inc., revealed a different breakdown. While the Los Angeles Department of Regional Planning estimated there were 16,803 total dwelling units, the 1978 survey totalled 16,082 units, a 721 unit difference. The 1978 Housing Survey also found that 73.0 percent of the total actual units were single family units, and multiple/mobile home units combined accounted for 27.0 percent. In accepting the survey's data as being the most dependable and current dwelling count, the housing stock of Lancaster increased by 58 percent since the 1970 Census, a total of 5,909 housing units. Since the 1978 percentage of multiple units/mobile homes has almost doubled from the 1970 figures, it follows that most of the City's housing stock growth occurred in this category of units. This 1978 information is shown in Table 3.15. A 1970 detailing of housing units by type is presented in Table 3.16.

Table 3.17 presents the total 1970 housing units by census tract for owner-occupied, renter-occupied and vacant units.

TABLE 3.15

CITY OF LANCASTER
1978 HOUSING INVENTORY

Unit Type	*Number of Units*	*% Units*	*% Population*	*Net Acres*	*Density d.u./ac.*
Single Family	11,727	73	82.7	3,938	3.0
Apartments, condo-miniums, and mobile homes	4,355	27	17.3	460	9.5
TOTAL:	16,082	100	100.0		

Source: Envicom Corporation, Urban Futures City of Lancaster Housing Assistance Plan.

TABLE 3.16

HOUSING UNITS BY TYPE

Census Tract	*Housing Units*	*Single Units*	*Multiple Units*[a)]
9008.02	2,440	1,957 (80.2%)	483 (19.8%)
9008.01	1,531	1,230 (80.4%)	301 (19.6%)
9006	2,238	1,857 (83.0%)	381 (17.0%)
9003	194	187 (96.4%)	7 (3.6%)
9005	1,226	1,166 (95.1%)	60 (4.9%)
9007	2,058	1,777 (86.3%)	281 (13.7%)
9010	486	486 (100.0%)	0 (0.0%)
CITY TOTAL (1970):	10,173	8,660 (85.1%)	1,513 (14.9%)
1978 Survey:	16,082	11,727 (73.0%)	4,355 (27.0%)
Change from 1970:	5,909 (+58.0%)	3,067 (+35.4%)	2,842 (+187.8%)

Sources: (1970) U.S. Census.
(1978) Urban Futures, Inc.

a) Mobile homes are included in multiple unit count.

TABLE 3.17

DWELLING UNITS BY TENURE AND CENSUS TRACT 1970

Census Tract	Total Dwelling Units	Percent of City Total	Owner Occupied (% of Tract)	Renter Occupied (% of Tract)	Vacant Units (% of Tract)
9003	194	1.9%	133 (68.6%)	52 (26.8%)	9 (4.6%)
9005	1,226	12.0%	828 (67.5%)	321 (26.2%)	77 (6.3%)
9006	2,238	22.0%	1,338 (59.8%	781 (34.9%	119 (5.3%)
9007	2,058	20.2%	1,364 (66.3%)	601 (29.2%)	93 (4.5%)
9008.01	1,531	15.0%	929 (60.7%)	534 (34.9%)	68 (4.4%)
9008.02	2,440	24.0%	1,289 (52.8%)	1,052 (43.1%)	99 (4.1%)
9010	486	4.8%	409 (84.1%)	47 (9.7%)	30 (6.2%)
TOTAL	10,173	100.0%	6,290	3,388	495
% OF CITY:	-	-	61.8%	33.3%	4.9%

Source: 1970 Census.

4.2 Age of Units

The age of a community's housing stock is an important consideration in determining housing needs, since many assistance programs, such as rehabilitation loans and grants, are aimed primarily at improving the housing stock of the community. Older homes that are small do not always meet modern codes and often show signs of deterioration. Ultimately, they are often rented for whatever the market will bear, while the absentee landlord allows continued deterioration. The tenants of these lower-rent units usually cannot afford to properly maintain the structure and it may fall into a state of more serious dilapidation, possibly beyond rehabilitation. In other cases, the occupants of older homes may be retired elderly residents living on a fixed income, thus unable to properly maintain their home. Whatever the reasons, failure to maintain property, especially older homes, may often lead to neighborhood blight and overall deterioration in portions of the community.

The characteristics of older homes are not always negative. They often offer benefits not found in new subdivisions, such as larger yard areas, mature gardens and neighborhood trees, sales prices that are more appealing to lower-income families, and established residents who may have lived there for years or even decades. Therefore, the benefits to be derived from the rehabilitation or preservation of these older neighborhoods will be carefully weighted against the costs when ranking areas in need of housing assistance.

Historically, Lancaster began as a settlement centering on a Southern Pacific Railroad water stop. Its development into an agricultural market center was made possible due to the area's subterranean artesian water basin which supplied local irrigation water for the Antelope Valley. In the 1950s, Lancaster experienced a ten-fold population growth over the previous decade, an important point in considering the revitalization of an older, physically declining housing stock.

In general, the earliest housing in Lancaster developed around the intersection of Sierra Highway and Lancaster Boulevard. Much of the housing was constructed prior to 1960; smaller clusters are pre-1950 units. In the 1960s, housing expanded outward to the north and west. During the 1970s, new housing construction has occurred in the east and southwest area of Lancaster. The phasing of this growth is shown on Figure 2.

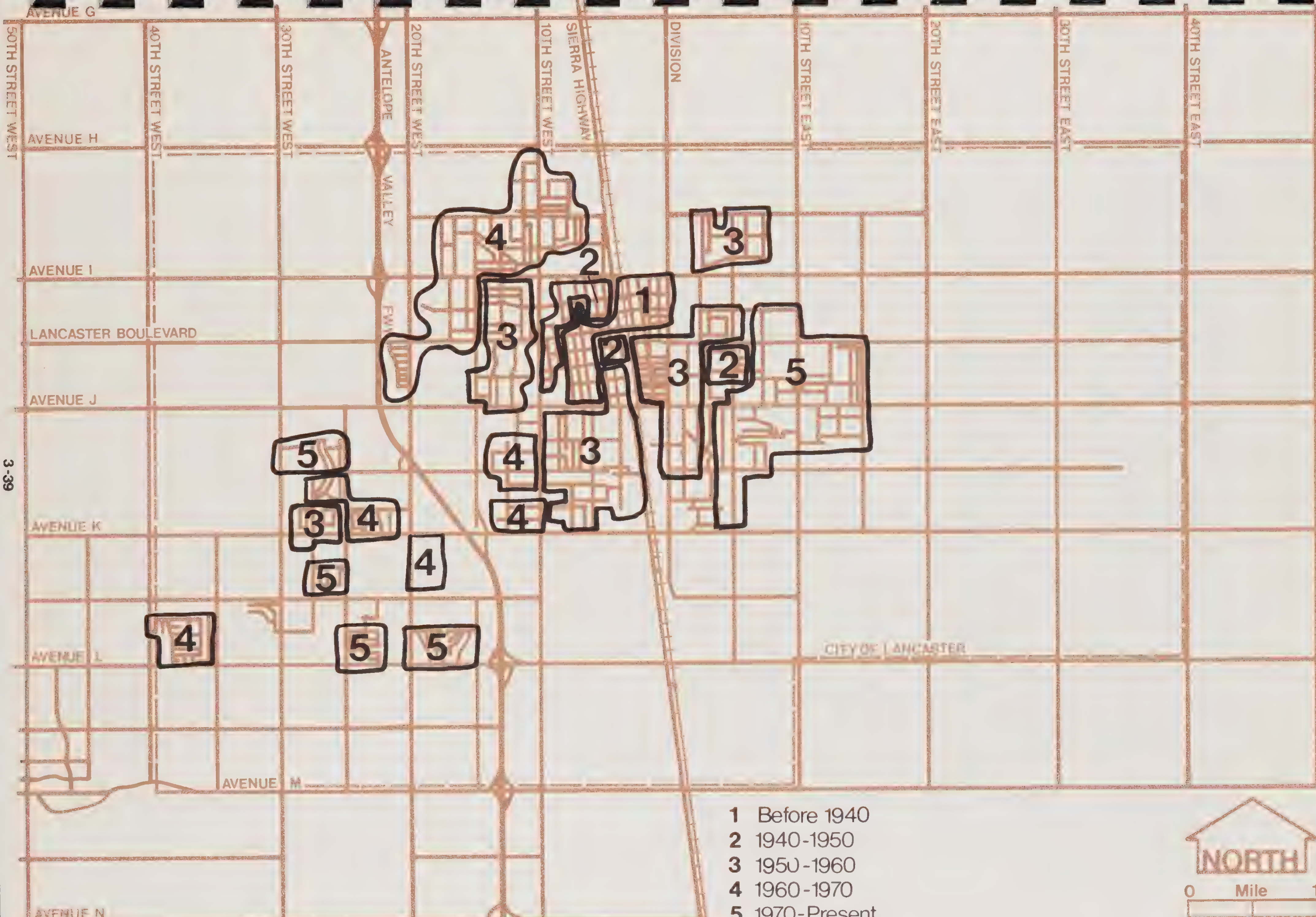


Figure 2

Historic Growth of the City

Overall, the majority of the City's housing stock (72.1%) was constructed in the decade between 1950 and 1960. This growth, as shown on Figure 2, occurred in areas adjacent to the older urban areas and used significantly more land than had previously housed the entire City. As a result of this boom, 94.2% of Lancaster's 1970 housing stock was built prior to 1960.

The greatest concentrations of multiple housing units occurred in those areas closest to the established central core of Lancaster and its historic main transportation artery, the Sierra Highway. In 1970, 20 percent of all dwellings in census tracts 9008.01 and 9008.02 were multiple units, while tracts 9006 and 9007 were reported to have 17 percent and 13.7 percent multiple units, respectively.

The greatest percentage of single family homes in Lancaster are located in the periphery housing areas comprised of tracts 9003, 9005, and 9010. Tracts 9003 and 9005 were both reported to have over 95 percent of their total dwellings considered single family units in 1970. The entire housing stock in tract 9010 was reported to be single family units, a large majority built since 1960.

Table 3.18 shows the structural age of housing units by census tract.

TABLE 3.18

STRUCTURAL AGE OF HOUSING UNITS BY CENSUS TRACT

Period of Construction	*Census Tract* 9008.02	9008.01	9006	9003	9005	9007	9010	*City Total*
1965-70	3.6%	5.9%	8.2%	16.2%	7.3%	4.2%	49.5%	7.9%
1960-64	3.6%	5.3%	13.0%	18.3%	3.3%	8.5%	18.0%	7.9%
1950-59	62.6%	88.2%	69.7%	43.4%	73.0%	84.5%	32.5%	72.1%
1940-49	17.9%	.3%	5.6%	10.5%	9.1%	2.3%	-	7.1%
Prior to 1940	12.3%	.3%	3.5%	11.6%	7.3%	.5%	-	5.0%
% 1960-1970	7.2%	11.2%	21.2%	34.5%	10.6%	12.7%	67.5%	15.8%
% Prior to 1960	92.8%	88.8%	78.8%	65.5%	98.4%	87.3%	32.5%	84.2%

Source: 1970 Census.

4.3 Condition of Units

In 1978, Urban Futures, Inc., conducted a house-by-house survey of all units in Lancaster. The methodology, findings, and a full description of the survey are contained in the Housing Assistance Plan as adopted by the City in March, 1979. The findings of the survey are presented herein.

Table 3.19 indicates that of the total 16,075 units rated, 14,617 were of average condition or better, 1,096 were in need of some minor rehabilitation, 289 required moderate rehabilitation, and 73 were in need of major repairs. The categories of rehabilitation are based on direct experience by Urban Futures, Inc., with rehabilitation programs and resultant average costs for various types of rehabilitation efforts. The average rehabilitation cost for each category is as follows:

1. Beyond Rehabilitation - equals or exceeds cost of new construction.
2. Major Rehabilitation - average $16,000.
3. Moderate Rehabilitation - average $8,000.
4. Minor Rehabilitation - average $2,000.
5. Good Condition - insignificant cost.

No units surveyed in Lancaster were rated as "beyond rehabilitation".

Figure 3 shows the extent of repairs required of single family homes by area. Figures 4 and 5 show similar information for multiple units and mobile homes.

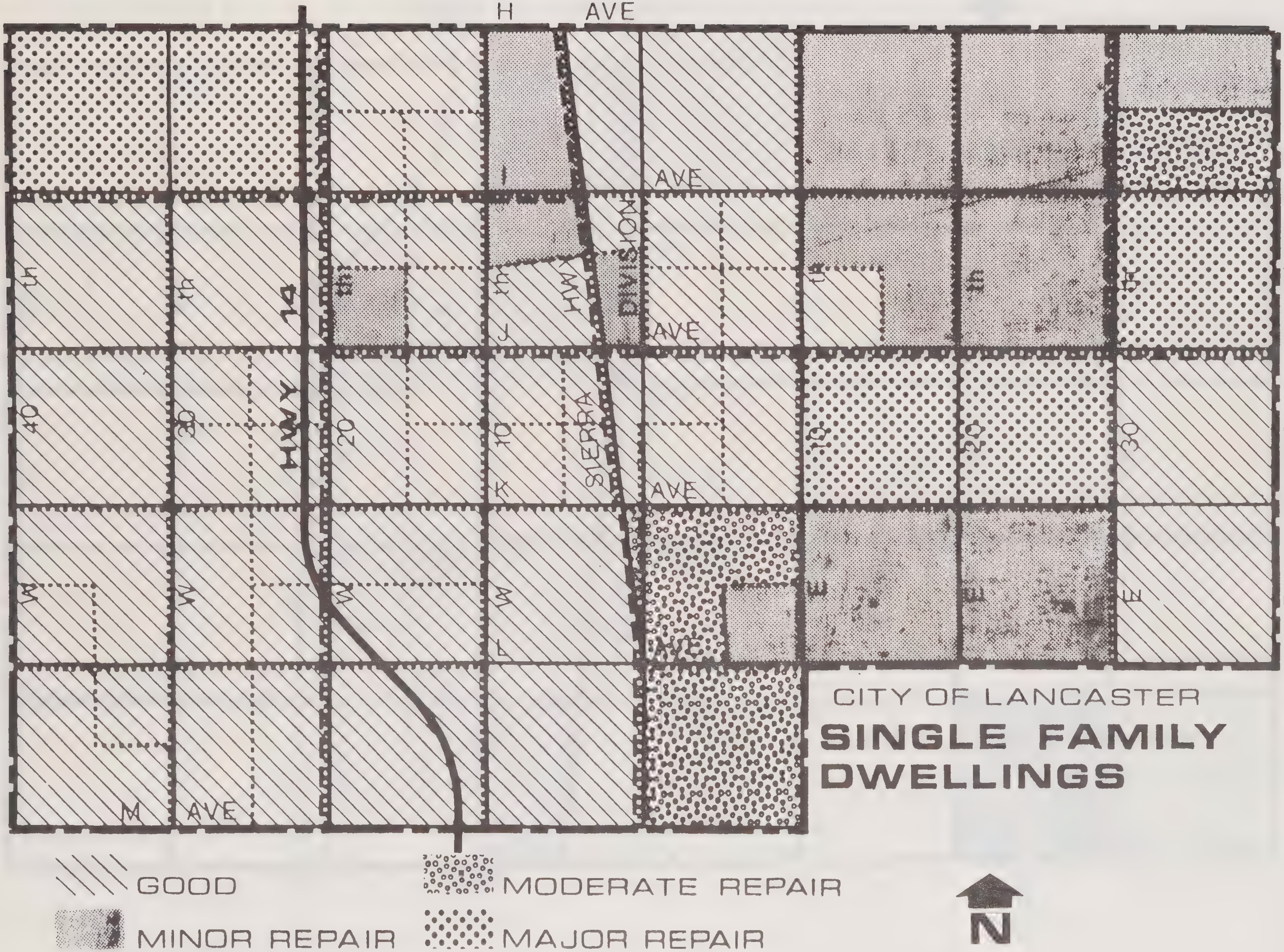
TABLE 3.19

CLASSIFICATION OF RESIDENTIAL UNIT CONDITION - 1978

Census Tract	*Total*	*Good*	*Minor Repair*	*Moderate Repair*	*Major Repair*
9008.02	2,211	2,031 (91.86%)	139 (6.29%)	24 (1.09%)	17 (.77%)
9008.01	1,851	1,758 (94.98%)	87 (4.7%)	6 (.32%)	0
9006	4,379	4,016 (91.71%)	273 (6.23%)	62 (1.42%)	28 (.64%)
9003	194	100 (52%)	88 (45%)	3 (1.5%)	3 (1.5%)
9005	1,958	1,796 (92%)	105 (5.36%)	42 (2.15%)	15 (.77%)
9007	3,116	2,930 (94%)	167 (5.36%)	15 (.48%)	4 (.13%)
9010	2,366	1,986 (83.94%)	237 (10.02%)	137 (5.79%)	6 (.25%)
CITY TOTAL:*	16,075	14,617 (90.93%)	1,096 (6.82%)	289 (1.8%)	73 (.45%)

*NOTE: Census tract 9009 has seven housing units that were surveyed by Urban Futures, Inc. Of the seven units, five were rated "Good", while the remaining two needed "Minor Repairs". This would create a City housing unit total of 16,082.

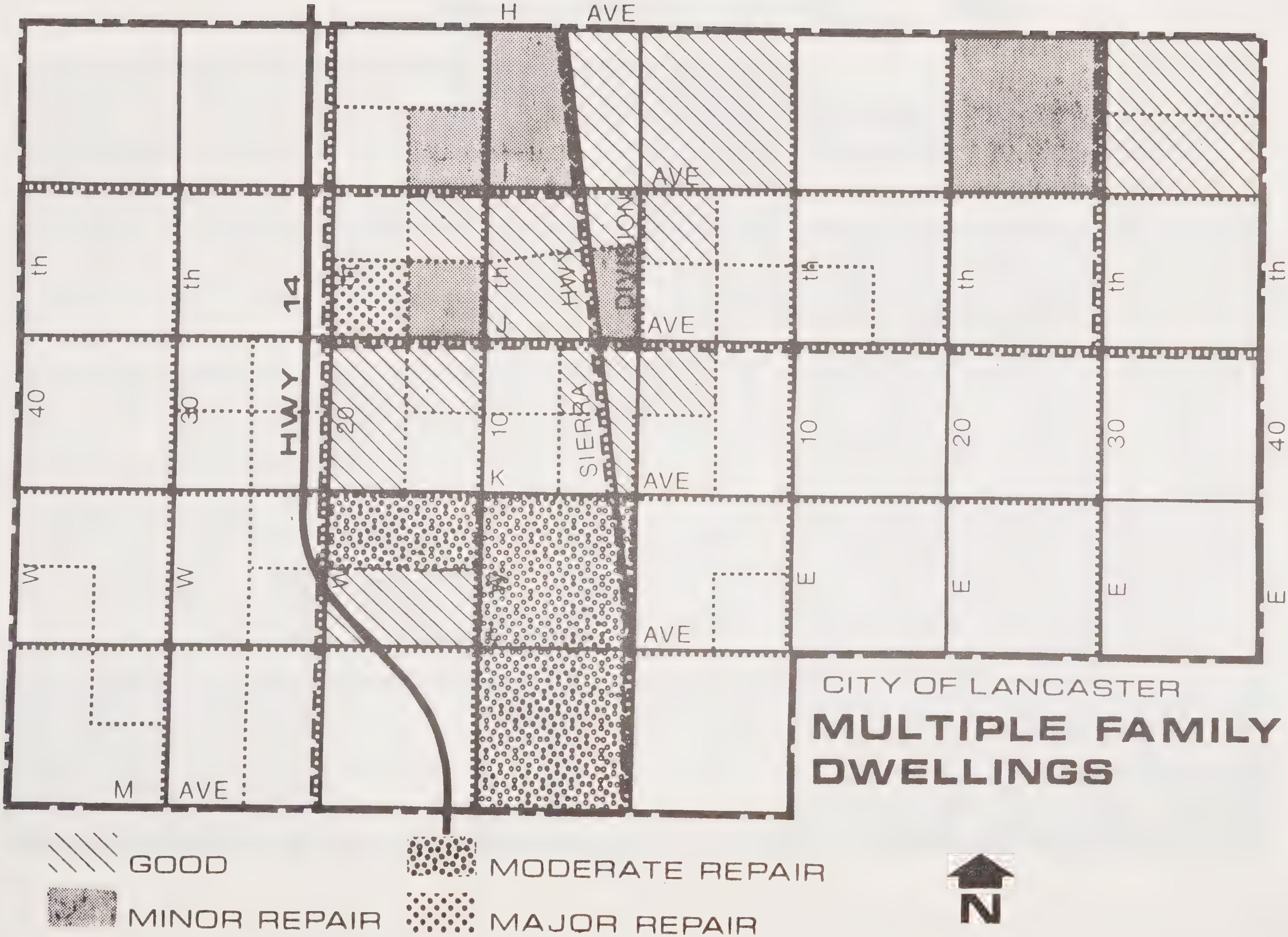
Source: Urban Futures, Inc., City of Lancaster Housing Assistance Plan, March, 1979.



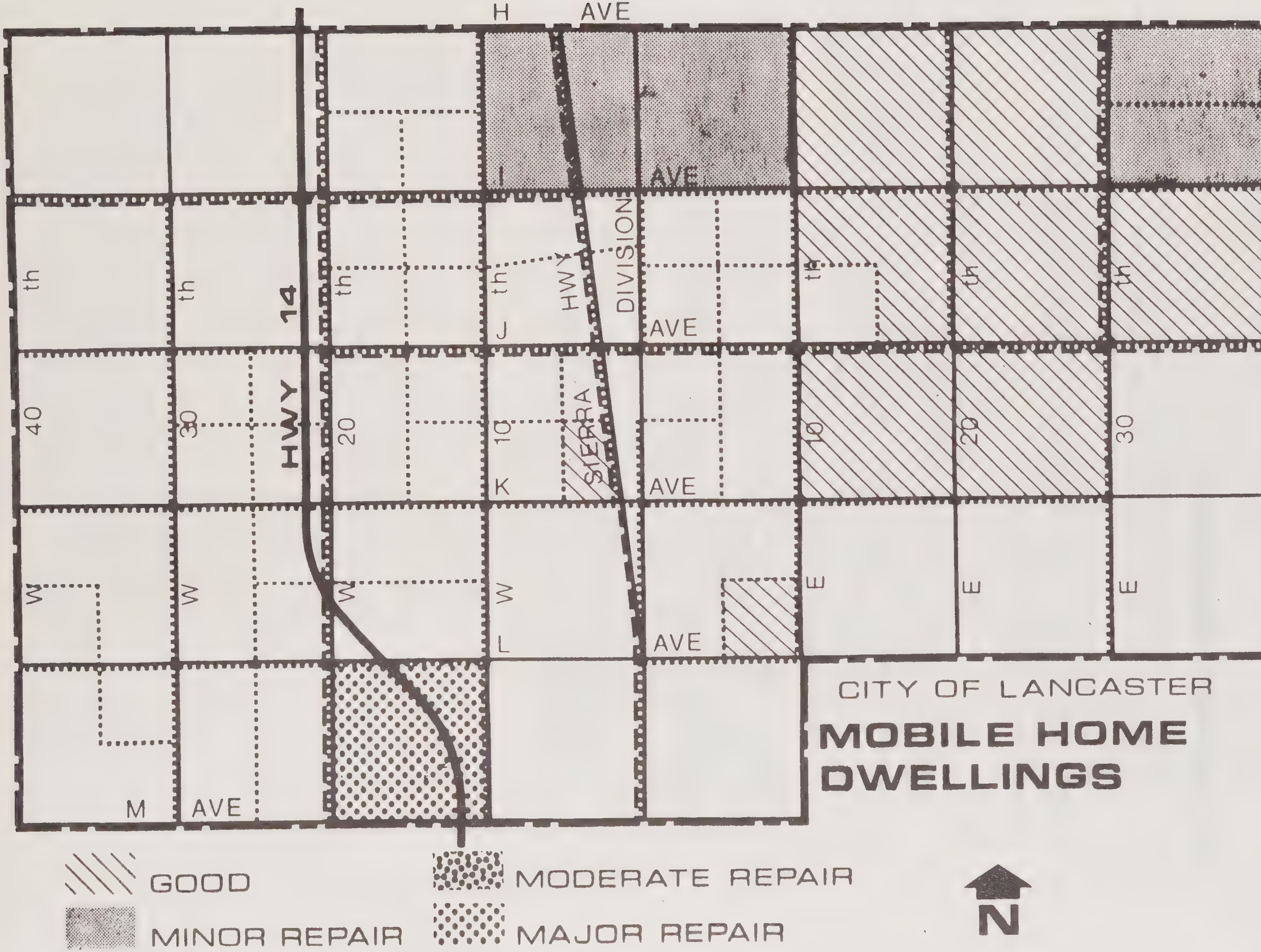
Source: Urban Futures

Figure 3

Figure 4



Source: Urban Futures



Source: Urban Futures

Figure 5

4.4 Housing Costs and Rents

Housing costs and rent information is only available from the 1970 Census, although it is recognized that substantial increases have occurred since then. Table 3.20 shows the relative increases in home prices, income and rents from 1970 to 1978. This table indicates that housing prices have increased 200% since 1970, whereas income has increased 71% and rents 56%.

In 1970, the median cost of housing in Lancaster was $18,900. If housing in Lancaster has escalated at the same rate as for all of Southern California, the 1978 median would be $56,700. In 1970, approximately two-thirds of the owner-occupied units were in the $15,000 to $24,999 price range. The highest median housing cost was $29,200 in census tract 9010. The lowest median housing cost was $15,800 in census tract 9003.

Median contract monthly rents for renter-occupied units ranged from $136 per month in census tract 9007 to $83 per month in tract 9003. The 1970 median contract rent for Lancaster was $116 per month. Increases similar to that experienced in the Los Angeles region would have increased this median to $181 in 1978.

Table 3.21 shows the distribution of owner-occupied units by housing unit cost. Table 3.22 shows the distribution of renter-occupied units by average contract rent.

TABLE 3.20

HOME PRICES, RENTS AND INCOME TRENDS
1970-1978

Year	Home Prices[1]	Income[2]	Rents[3]
1970	100.00	100.00	100.00
1971	104.4	100.3	103.8
1972	109.3	112.4	105.4
1973	117.9	122.3	108.9
1974	134.1	134.1	114.6
1975	154.4	147.6	120.5
1976	188.6	-	129.6
1977	246.0	-	142.1
1978	305.7	171.3	156.1

[1] Southern California.

[2] SCAG Region.

[3] Los Angeles Area.

Sources: SCAG Housing Element, April 1979.
Home Prices - Real Estate Research Council of Southern California.
Income - State Department of Finance and Dept. of HCD.
Rents - U.S. Bureau of Labor Statistics.

TABLE 3.21

DISTRIBUTION OF OWNER-OCCUPIED UNITS
BY HOUSING UNIT COST

Housing Unit Value	*Census Tract* 9008.02	9008.01	9006	9003	9005	9007	9010	*CITY TOTALS*
Less than $5,000	1	0	3	1	6	3	0	14/.2%
$5,000-$9,999	32	1	6	16	38	7	1	101/1.7%
$10,000-$14,999	183	151	119	35	134	171	51	844/14.2%
$15,000-$19,999	341	496	714	21	338	604	95	2,609/43.9%
$20,000-$24,999	360	131	227	18	114	366	11	1,227/20.6%
$25,000-$34,999	257	37	157	9	149	165	107	881/14.8%
$35,000-$49,999	37	0	9	8	18	6	122	200/3.6%
$50,000 or More	31	0	3	2	5	2	18	61/1.0%
TOTAL OWNER-OCCUPIED UNITS:	1,242	816	1,238	110	802	1,324	405	5,937*
MEDIAN VALUE:	$20,900	$17,500	$18,600	$15,800	$18,300	$19,100	$29,200	$18,900

Source: 1970 Census; Urban Futures, Inc.

*Due to discrepancies in the 1970 Census, the number of total owner-occupied units presented here does not equal the correct total of 6,920. However, the above data is presented to show general proportions and is accurate enough for that reason.

TABLE 3.22

DISTRIBUTION OF RENTER-OCCUPIED UNITS
BY AVERAGE CONTRACT RENT

Average Monthly Contract Rent	*9008.02*	*9008.01*	*9006*	*9003*	*9005*	*9007*	*9010*	*CITY TOTALS*
Less than $40	41	3	13	4	5	13	1	80/2.3%
$40 to $59	174	2	15	9	9	5	0	214/6.3%
$60 to $79	169	2	78	27	30	23	2	331/9.7%
$80 to $99	192	134	129	28	46	46	1	576/6.9%
$100 to $149	291	290	351	19	145	299	33	1,428/41.8%
$150 to $199	117	89	169	0	64	178	6	623/18.3%
$200 to $249	29	4	13	0	7	22	1	76/2.2%
$250 or More	6	5	2	0	1	2	1	17/.5%
NO CASH RENT:	27	5	8	4	11	10	2	67/2.0%
TOTAL RENTAL UNITS:	1,046	534	778	91	318	598	47	3,412*
MEDIAN CONTRACT RENT:	$93	$119	$124	$83	$123	$136	$133	$116

Source: 1970 Census; Urban Futures, Inc.

*Due to discrepancies in the 1970 Census, the number of total renter-occupied units presented here does not equal the correct total of 3,388. However, the above data is presented to show general proportions and is accurate enough for that reason.

5.0 Housing Needs Data

5.1 Affordability

A traditional guideline to determine the price of housing that a household can afford has been 2.5 times the annual income, or for rents, 25% of the gross monthly income. Because of recent increases in housing prices, there has been some fluctuation in these guidelines. In some instances, the housing multiplier has been 3.0 times the annual income. In addition, many homeowners who have held property during the recent increase now have substantial equity with which to compensate for an income deficiency. Table 3.23 has been prepared using the traditional guidelines for 1970 and projected 1978 housing costs. It shows that Lancaster residents could afford housing and pay less than the guideline amounts. The same situation prevailed for 1978 rents, but housing costs had climbed faster than incomes and exceeded guideline affordability. Table 3.23 shows a 1978 income deficit of $7,877 in order to afford the projected 1978 housing cost of $57,777. In order to afford the median house in 1978 a Lancaster resident would either have to compensate for the income deficiency with an increased down payment from previous equity, or increase the income to price multiplier to 2.9.

Rents, however, have become more affordable, as shown on Table 3.23. This is because rents have increased at a slower rate than the rate at which income has increased. Therefore, Lancaster residents could theoretically afford rents in excess of 1978 prices.

These figures represent the average, or median, home buyer/renter in Lancaster. Table 3.23 shows that the percent saved has switched from a savings to a deficit in the last eight years. With each passing year, increasing numbers of low and moderate income households are becoming unable to afford housing in the existing stock. It will be the lower and moderate income families that will need some degree of housing assistance as we enter the 1980s.

Table 3.24 indicates that there was more than enough affordable housing in all income categories in 1970 according to the Census. The table shows that there was a surplus of 3,011 housing units available to the lower-income households earning $12,000 a year or less. Because this excellent situation of 1970 has changed and is still rapidly changing, now is the time for Lancaster to protect its existing housing stock from deterioration, to supply affordable dwellings to the middle and upper income groups and to

TABLE 3.23

ESTIMATED 1978 HOUSING AFFORDABILITY

Years	*Median Income*	*Actual Housing Costs/ Contract Rent*	*Affordable Housing Costs/ Contract Rent*	*Difference*[f] *(Percent Saved)*
1970	$11,651[a]	$18,900/$116[a]	$29,127/$243[b]	$+10,277/$+127 (35.1%)/(52.3%)
1978	$19,960[c]	$57,777[d]/$118[e]	$49,900/$415[b]	$-7,977/$+234 -15.8%/(56.4%

[a] 1970 U.S. Census.

[b] Affordable housing cost = median income x 2.5.
Affordable contract rent = median income ÷ 48.

[c] 171.3% of 1970 (see Table 4.4.1).

[d] 305.7% of 1970 (see Table 4.4.1).

[e] 156.1% of 1970 (see Table 4.4.1).

[f] Positive figures indicate income in excess of housing/rent costs. Negative numbers indicate income deficiency to obtain housing/rent.

TABLE 3.24

HOUSING NEEDS ANALYSIS - 1970

DEMAND								
Income	0-$3000	$3000-$7000	$7000-$12000	$12000-$16000	$16000-$22000	$22000-$36000	$36000 and Up	Total
Total Households	522	1,283	2,606	1,714	1,405	607	276	8,413
SUPPLY								
House Values and Rents	0-$5000 0-$75	$5000-14000 $75-165	$14000-20000 $165-230	$20000-27000 $230-280	$27000-37000 $280-365	$37000-60000 $365-500	$60000 & Up $500 & Up	
Owner-Occupied	65	828	2,828	1,454	783	234	98	6,290
Renter-Occupied	626	2,233	482	40	7	-	-	3,388
Vacant Units	35	156	169	77	41	12	5	495*
Total Units	726	3,217	3,479	1,571	831	246	103	10,173
NEED								
Total Demand	522	1,283	2,606	1,714	1,405	607	276	8,413
Total Supply	726	3,217	3,479	1,571	831	246	103	10,173
Total Needs	+204	+1,934	+ 873	- 143	- 574	-361	-173	+1,760
		(+3,011 Surplus)			(-1,251 Deficient)			

lower incomes

* Value of vacant units not known; percentages of total occupied housing per value/rent categories used for distribution of vacant units.

SOURCE: 1970 Census
Urban Futures, Inc.

construct new or renovate existing rental units for afford-
able lower-income housing.

5.2 Rehabilitation/Replacement

One of the methods to meet housing needs is to rehabilitate units that are in disrepair, or to replace units that are beyond rehabilitation. A survey conducted by Urban Futures, Inc., in 1978 found no units in Lancaster in the beyond rehabilitation category. As such, the needs of existing housing stock can be provided with rehabilitation.

Urban Futures found that of the 16,082 dwelling units in Lancaster in 1978, 14,622 (90.92%) were in need of no significant repairs. Minor repairs (average $2,000 cost) were needed on 1,096 (6.82%) units. Moderate repairs (average $8,000) were needed on 289 (1.8%) units, and major repairs (average $16,000) were required on 73 (0.45%) units.

5.3 New Construction

In addition to meeting the needs of existing residents, housing will be required for new residents as growth occurs in Lancaster. Table 3.25, Additional Dwelling Unit Demand, shows the number and type of dwelling units required through the year 2000 for each of the four population forecasts.

The low population forecast requires 6,599 single family units and 3,685 multiple family units, for a total of 10,284 units by the year 2000. The high population forecast requires 27,862 single family units and 16,454 multiple family units, for a total new demand of 44,316 units by the year 2000.

Table 3.25 also shows the land required for this housing. The low population forecast requires 1,467 acres, whereas the high forecast requires 5,926 acres.

TABLE 3.25

CITY OF LANCASTER
ADDITIONAL DWELLING UNIT DEMAND (UNITS AND ACRES)

			Additional Dwelling Units Required									
		Net Increase (Each Time Period	*Single Family*				*Multiple*				*Total Units*	
Year	*Population*		*% Pop.*	*D.U. (3.2 pers/d.u.)*	*D.U./Ac.*	*Additional Acreage*	*% Pop.*	*D.U. (1.8 pers/d.u.)*	*D.U./Ac.*	*Additional Acreage*	*D.U.*	*Acreage*
1980	46,408	1,043	82	267	4	67	18	104	10	10	371	77
	46,408	1,043	82	267	4	67	18	104	10	10	371	77
	47,724	2,359	82	605	4	151	18	249	10	25	854	176
	47,724	2,359	82	605	4	151	18	249	10	25	854	176
1985	51,997	5,589	80	1,397	4.5	310	20	621	12	52	2,018	362
	51,997	5,589	80	1,397	4.5	310	20	621	12	52	2,018	362
	61,492	13,768	80	3,442	4.5	765	20	1,530	12	128	4,972	893
	61,492	13,768	80	3,442	4.5	765	20	1,530	12	128	4,972	893
1990	58,258	6,261	78	1,526	5	305	22	765	14	55	2,291	360
	63,418	11,421	78	2,784	5	557	22	1,396	14	100	4,180	667
	79,231	15,739	78	3,836	5	767	22	1,924	14	137	5,760	904
	84,391	22,899	78	5,581	5	1,116	22	2,799	14	200	8,380	1,316
1995	65,273	7,000	75	1,641	6	274	25	972	15	65	2,613	339
	79,133	15,715	75	3,683	6	614	25	2,183	15	146	5,866	760
	102,088	22,857	75	5,357	6	893	25	3,176	15	212	8,533	1,105
	115,948	31,557	75	7,396	6	1,233	25	4,383	15	292	11,779	1,525
2000	73,132	7,859	72	1,768	7	253	28	1,223	16	76	2,991	329
	105,712	26,579	72	5,980	7	854	28	4,135	16	258	10,115	1,112
	131,538	29,450	72	6,626	7	947	28	4,581	16	286	11,207	1,233
	164,118	48,170	72	10,838	7	1,548	28	7,493	16	468	18,331	2,016
Net Increase		27,727		6,599		1,2[illegible]		3,685		258	10,284	1,467
		60,347		14,111		2,4[illegible]		8,1[illegible]9		566	22,550	2,968
		86,173		19,866		3,523		11,460		788	31,326	4,311
		118,753		27,862		4,813		16,454		1,113	44,316	5,926
TOTAL (Year 2000):				18,326		6,131		8,040		718	23,366	6,849
				25,838		7,324		12,794		1,026	38,632	8,350
				31,593		8,445		15,815		1,248	47,408	9,693
				39,589		9,735		20,809		1,573	60,398	11,308

Source: Envicom Corporation.

5.4 Adequate Sites

The City of Lancaster incorporated 37 square miles of the Antelope Valley in November, 1977. Table 3.26, Estimated Year 2000 Land Use, shows the availability of land for all urban development in Lancaster through the year 2000. In summary, the table shows that land will be available even under the high end population forecast. In 1979, 12,324 acres were available for urban uses. In the year 2000, using the low population forecasts, there will be 9,464 acres available for urban uses. Utilizing the high forecast, there will be an excess of 1,113 acres available for urban uses in 2000.

TABLE 3.26

SUMMARY: ESTIMATED YEAR 2000 LAND USE

		Projected Year 2000 Demand Population Series							
		E-O w/o PMD		*E-O w/PMD*		*D-150 w/o PMD*		*D-150 w/PMD*	
Population Series	*Existing 1979 Acres*[1]	*Net Increase*	*Total*	*Net Increase*	*Total*	*Net Increase*	*Total*	*Net Increase*	*Total*
Residential	5,382	1,467	6,849	2,968	8,350	4,311	9,693	5,926	11,308
Single-Family[2]	4,922	1,209	6,131	2,402	7,324	3,523	8,445	4,813	9,735
Multiple[3]	460	258	718	566	1,026	788	1,248	1,113	1,573
Commercial	835	276	1,111	571	1,406	780	1,615	1,075	1,910
Neighborhood[4]		56		121		172		238	N.A.
Community[4]		24		52		74		102	
Regional[4]		49		70		88		109	
Other[4]		147		328		446		626	
Industrial	185	322	507	343	528	808	993	830	1,015
Public	427	138	565	332	759	455	882	648	1,075
Parks	95	234	329	380	475	497	592	643	738
TOTAL URBAN USE:	6,924	2,437	9,361	4,587	11,518	6,851	13,775	9,122	16,038
Right-of-Way									
Urban	3,096	672	3,768	1,521	5,076	2,337	5,522	3,320	6,310
Rural	1,336	(224)	992	(507)	829	(809)	349	(1,106)	18
Rural or Undeveloped	12,324	(2,765)	9,559	(5,455)	6,869	(8,290)	4,034	(11,115)	1,208
TOTAL:	23,680	-	23,680	-	23,680	-	23,680	-	23,680

[1] Southern California Edison Company land use inventory and Envicom Corporation estimates.
[2] Does not include residential of less than 3.0 units/acre.
[3] Includes mobile homes and mobile home parks.
[4] Estimates of existing use by this category are not available.

Source: Envicom Corporation.

5.5 Fair Share Allocation

Since Lancaster was incorporated late in 1977, SCAG has not yet established the fair share allocation.

6.0 Constraints

There are currently a number of constraints that are imposed on the normal functioning of the housing market that may inhibit the City's ability to meet its housing needs. Many of these constraints are not unique to Lancaster and will require regional, statewide, or federal intervention to alleviate.

1. Increasing Demand: In an effort to preserve capital, reduce tax liabilities, and enjoy the benefits of home ownership, the demand for housing has dramatically increased. As a result, home prices are inflated, and vacancy rates are low.

2. Increasing Costs of Supplying Housing: Housing cost figures released in 1978 by the Construction Industry Research Board provide a startling illustration of the increasing costs of supplying housing (Table 3.27). As might be expected, land, labor, and materials are major deterrents to providing high quality housing at affordable prices.

   High interest rates and the scarcity of mortgage financing also have an enormous effect on the cost and quantity of housing (mortgage financing is one of the largest components of housing cost). In Southern California, mortgage interest rates have varied from 7.5% to 12% since 1970. Financing on larger projects has been known to go as high as 13%. Financing is also often limited to certain areas and more expensive housing (e.g., current difficulty in obtaining financing for rental apartment developments).

3. Speculation: The uncertain nature of the Palmdale International Airport has led to extensive speculation in Lancaster as well as other areas of the Antelope Valley.

4. Unemployment in the City represents a constraint because of its implication on housing. Unemployment lowers household income, increases the demand for lower priced units, makes it extremely difficult for many to make housing payments and maintenance costs, and, as a result, encourages overcrowding (i.e., two-family households).

TABLE 3.27

CHANGE IN MEDIAN COST OF NEW SINGLE FAMILY DETACHED HOUSING
IN LOS ANGELES COUNTY
BY COST COMPONENT
1970 - 1977

Cost Component	*1970 Cost*	*1970 Percent Dist.*	*1977 Cost*	*1977 Percent Dist.*	*Percent Change 1970-77*
Construction					
Labor	$ 6,560	20.9%	$11,800	17.7%	79.9%
Materials	11,020	35.1	19,800	29.8	79.7
Total Construction Cost	17,580	56.0	31,600	47.5	79.7
Improved Land	6,600	21.0	17,300	26.0	162.1
Financing	2,040	6.5	6,000	9.0	194.1
Overhead	1,570	5.0	3,325	5.0	111.8
Profit	2,200	7.0	4,975	7.5	126.1
Other	1,410	4.5	3,300	5.0	134.0
TOTAL COST:	31,400	100.0%	66,500	100.0%	111.8%

Source: National Association of Home Builders, Compiled by Construction Industry Research Board, 1978.

5. Racial and economic discrimination has a direct effect on housing and results in the concentration of minorities and lower income households. Often this discrimination is subtle and difficult to document.

6. The lack of tenant education and maintenance skills contributes to housing deterioration.

7. Land Use Codes and Building Regulations and their processes contribute to the cost of housing. However, they are meant to protect the public health and safety and ensure environmental quality.

8. Unpredictable housing funding is a major constraint to providing adequate housing. The supply of housing funding has historically fluctuated. The Federal and State Governments must be urged to provide an adequate, predictable and steady flow of capital to assist the City in dealing with those aspects of the housing program which are beyond local capabilities.

9. Local government reliance on the property tax may encourage land use decisions counter productive to attainment of the City's current housing needs. The current political atmosphere in the aftermath of Proposition 13 may tend to restrict the supply of lower cost new housing by encouraging residential developments that yield higher assessed valuations. Developments that require public investment in infrastructure may also be prohibitively expensive because of the resistance of cities, or the inability of cities, to use property taxes to fund the improvements. Consequently, new units must also include the cost of improvements previously funded by public resources.

7.0 Goals and Policies

7.1 Goals

It shall be the goal of the City of Lancaster to:

Availability

Increase the availability of a decent home for every household within the City and an adequate vacancy rate to ensure mobility, opportunity and diversity.

Quality

Provide adequate and desirable housing of sound quality in good neighborhoods; the maintenance of existing units in good repair, and the prompt rehabilitation of deteriorated units; the provision of a meaningful sense of community life in all residential areas, consistent with orderly growth and environmental consumption, and with sound and adequate employment, services and community facilities.

Affordability

Provide an adequate supply of housing within the economic means of all persons, including low and moderate income households, the elderly, handicapped, large families, and other special needs groups.

Opportunity

Assure equal housing choices and opportunities for all households within the City, and assure access to housing regardless of race, religion, ethnicity, sex, age, marital status or household composition.

7.2 Policies

It shall be the policy of the City of Lancaster to:

Issue One: Availability

1. Designate sufficient acreage to accommodate a full diversity of residential unit types (single family attached and detached, apartments, condominiums, mobile homes, etc.) as warranted by economic demand.

2. Promote and support efforts by public and private agencies and citizen groups to provide sufficient housing in all price ranges for persons employed in Lancaster.

3. Seek federal and state funding when available for the establishment of a low interest rehabilitation loan program for the maintenance of the housing stock.

4. Encourage the continued physical and economic viability of existing single family neighborhoods.

5. Encourage the establishment of educational and promotional programs for residents in the maintenance and conservation of existing residential neighborhoods and units.

6. Encourage the development of mobile home parks and subdivisions in residential areas and their exclusion from industrial and commercial areas.

7. Encourage the provision of adequate housing for all income groups by retaining a mix of rental and owner-occupant units sufficient to the needs of the population.

Issue Two: Quality

1. Encourage the development of balanced residential environments in proximity to urban services (i.e., roadways, water and sewage, recreation, educational facilities, governmental offices, health facilities, etc.) and major activity centers (i.e., commercial centers, location of employment, etc.).

2. Locate housing in an environment which does not endanger the health, safety or well-being of its occupants.

3. Allow for the development with a mixture of residential types within subidivisions (e.g., planned unit development) to promote residential amenities and lessen development costs.

4. Develop a comprehensive set of development and architectural standards for mobile home parks and subdivisions (including upgraded standards for landscaping, fencing and setbacks).

5. Reconsider assessment procedures for mobile homes reflecting their character as "modular residential units" rather than "vehicles".

6. Establish site and housing design criteria and standards for dwellings intended for senior citizens with specific provisions for accessibility and protection.

7. Pursue building code enforcement programs.

Issue Three: Affordability

1. Review government codes and ordinances so as to promote the flexibility to meet specialized group needs (e.g., elderly and handicapped).

2. Disperse low income housing in various locations throughout the City.

3. Promote and support efforts by public and private agencies and citizen groups to eliminate unreasonable obstacles in the supply of low and moderate income housing.

4. Seek available federal and state funds to improve the supply of housing for low to moderate income households.

5. Pursue the allocation of federal funding rent subsidy programs for the elderly, as available.

Issue Four: Opportunity

1. Encourage the provision of decent housing in a satisfying environment for all persons regardless of age, race, sex, marital status, ethnic background, income or other factors.

2. Promote and support efforts by public and private agencies and citizen groups to eliminate discrimination in the sale and rental of housing.

3. Promote and support efforts by public and private agencies and citizen groups to provide equal opportunity for low and moderate income persons and minority group members to occupy suitable housing.

4. Require that senior citizen housing be developed only in areas with adequate accessibility (i.e., public transportation or walking) to required services (including food stores, health facilities and community activities), or provide such facilities within or in proximity to the development.

8.0 Implementation

The following discussion presents a coordinated set of actions and processes to carry out the goals and policies of the Housing Element. The approach answers the needs highlighted in the Element: general implementation objectives are described; existing programs are identified and evaluated; and actions are recommended.

8.1 Implementation Objectives

1. To rehabilitate 20 percent of the units requiring major repairs per year, or all units in five years. This totals 15 units per year, and ten units in five years.

2. To rehabilitate 10 percent of the units requiring moderate repairs per year, or 50% in five years. This totals 29 units per year, or 145 units in five years.

3. To prevent units in the major rehabilitation category from deterioration further to a state beyond rehabilitation.

4. To preserve units in good condition from demolition by moving these units to suitable vacant sites for use as low and moderate income units.

5. To insure adequate supply of land for anticipated residential development by zoning land in excess of actual requirements. Excesses should be sufficient for five years growth in order to prevent inflated land values.

6. To plan for the orderly and efficient extension of public services in a phased program compatible with the rate of growth and with the specific areas to be developed.

7. To promote the construction each year of at least 20 percent of the 2,018 new dwelling units required by 1985 under the low population forecast. This level should be adjusted upward in accordance with the upper limit housing forecast if the higher growth rate occurs.

8. To provide assistance to 3 percent per year of the families and households below the poverty level, as determined by the 1970 Census. This would aid by 1985 15 percent of the 638 families below the poverty level.

9. To encourage the development of well planned mobile home parks compatible with surrounding land uses as a means of providing moderate to low-moderate income housing.

10. To encourage the development of high and medium density apartments as a means of providing low and moderate income rental units.

11. To expand housing opportunities, especially for low and moderate income households (with special attention to the needs of families, female-headed households, the elderly and handicapped, minorities, and other special needs groups).

8.2 Programs and Funding Sources

Implementation Objective	Funding Sources[a] and Program Potentials
1 and 2. Rehabilitation.	1, 2, 4, 5, 8, 10, 12, 13, 14, 15, 18, 24, 25, 27, 28.
3 and 4. Preservation of Existing Stock.	1, 2, 4, 8, 10, 12, 13, 14, 15, 16, 17, 18, 22, 23, 24, 25, 27, 28.
5. Adequate Land Supply.	1, 13, 14, 15, 16, 17, 21, 25.
6. Extension of Public Services.	1, 10, 13, 14, 15, 18, 20, 25.
7. New Construction.	1, 2, 3, 6, 9, 11, 13, 14, 15, 16, 19, 21, 25, 27.
8. Housing Assistance	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 14, 16, 19, 28.
9. Middle Income Housing.	1, 5, 9, 15, 16, 19, 20, 21, 22, 25, 27, 28.
10. Low Income Housing	1, 2, 3, 5, 11, 13, 14, 15, 16, 19, 20, 21, 25.
11. Equal Access and Opportunity.	1, 2, 15, 17, 19.

[a] See Table 3.28, "Housing Assistance Programs".

TABLE 3.28

HOUSING ASSISTANCE PROGRAMS

Federally funded

1. Housing and Community Development Act of 1974, as amended (HCDA).
2. Rent Assistance Programs
   a. Traditional Public Housing
   b. Section 8
3. Section 202 -- Direct loans for the Elderly or Handicapped.
4. Section 312 -- Rehabilitation Loans.
5. Section 235 -- Home Ownership Assistance for Lower-Income Households.
6. Section 515 -- Rural Rental-Housing Assistance.
7. Urban Homesteading.
8. Title 1 Insurance -- Property-Improvement Loans.

State funded

9. California Housing Finance Agency -- Mortgage Finance Program.
10. California Housing Finance Agency -- Neighborhood Preservation Program.
11. Farmworker Housing.

Locally funded

12. Marx-Foran Residential Rehabilitation Act.
13. Municipal Housing Finance Agency.
14. Tax Increment Financing through California Redevelopment Law.

Regulation and Taxing

15. Zoning and Land-Use Regulation.
16. Land Write-Downs and Land-Banking.
17. Anti-Redlining Practices.
18. Code Enforcement.
19. Inclusionary Ordinances.
20. Codes.
21. Reduction of Red Tape.
22. Speculation Controls.
23. Rent Stabilization.
24. Occupancy Inspection Ordinances.
25. Growth Management.
26. Local Housing Elements.
27. Cooperative Housing.
28. Administrative Variations for Housing Production.
   a. Community Development Commission
   b. Area Housing Councils.

4. Environmental Resources Management Element

1.0 Introduction

Concern over issues pertaining to environmental quality is not new. Yet the attention of the public on environmental quality and the maintenance of our natural resources has expanded significantly in the last decade. We drive considerable mileage between our widely scattered places of residence, employment, commerce, and recreation, exhausting a limited resource of oil and emitting harmful air pollutants; we build our houses in areas subject to flooding only to experience inevitable damage and property loss; we consume massive quantities of water for domestic and agricultural use, lowering the limited groundwater table to such an extent that it becomes too costly for continuing agricultural use and insufficient for domestic needs.

Each of these and all other natural resources are sensitive to or act as a hazard to the actions of man. Many are finite and, often, unrenewable commodities. Further, they are mutually dependent. No one exists in isolation from all others. Changes in one incur or are caused by change in another. Adverse degradation to one can disrupt a total food-chain system.

In recognition of the limits, degradation, and hazards of natural resources, a broad range of legislation has been introduced for their protection and management. Close scrutiny of the environmental consequences of public and private developments is required by the National Environmental Policy Act of 1969 (N.E.P.A.) and the California Environmental Quality Act of 1970 (C.E.Q.A.). Siting of developments in flood-prone areas is regulated by the federal Flood Insurance Program. Maintenance of water quality and wastewater disposal is directed by the Water Quality Control Act. Standards for air emissions and controls on land uses to maintain the air quality are mandated by the Clean Air Act.

Each of these and other legislation focuses on the management of one or more natural resource subsystems. As they are interrelated to all others, the environment being viewed holistically as an integration of all man-made and natural systems, a comprehensive management approach is required. Objectives need to be defined for each subsystem and their corresponding policies and implementation programs developed. Resulting from this procedure is the management of urbanization and natural resources so that they are compatible and non-deleterious.

The key role of environmental resource management falls largely on local government. It is incumbent on the City of Lancaster to meet the challenge of coping with environmental problems.

One means of achieving this mission is to develop a formalized approach and bring to bear public policy instruments upon environmental issues. This task is partially accomplished by incorporating policies and programs to those objectives in the comprehensive General Plan of the City of Lancaster. To ensure adherence to officially adopted statements of public policy, the regulatory powers of the City are involved, and City ordinances may be used to realize appropriate utilization of environmental resources and, in particular, open space.

1.1 Scope

This document is concerned with depicting the environmental resources of the City of Lancaster and its planning area as a unique form of natural and man-made wealth which constitute a diffuse, yet highly interdependent system. It is the objective of this element to enumerate those subsystems which comprise the baseline of environmental resources, assess their sensitivity to or constraint on classes of land use, and to prescribe strategies for their management and administration.

1.2 Organization of This Element

The Environmental Resources Management Element (E.R.M.E.) is structured as follows:

a. Section 2.0: Discussion of the State requirements for the E.R.M.E. and our elaboration of the specific elements contained herein.

b. Section 3.0: Summary of the environmental resources which are found in the City of Lancaster and its sphere of influence.

c. Section 4.0: An evaluation of the issues (i.e., sensitivities and constraints) associated with the City's environmental resources.

d. Section 5.0: Specification of environmental resource management policies and implementation programs.

2.0 Legislative Mandate and Content of E.R.M.E.

2.1 Statutory Requirements

Section 65300 of the State of California Government Code directs all cities and counties to prepare and adopt a comprehensive, long-term general plan for the physical development of all lands within their jurisdiction and any land outside their boundaries considered to be "clearly related" to their planning. According to the Code, the plan shall consist of nine mandated elements and others which a city or county should elect to pursue. A number of these are directed specifically at the management of the environmental resources found within the city or county, and include:

2.1.1 Conservation Element (Section 65302(d))

"A conservation element for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any county-wide water agency and with all district and city water agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared. The conservation element may also cover:

a. The reclamation of land and waters.

b. Flood control.

c. Prevention and control of the pollution of streams and other waters.

d. Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.

e. Prevention, control, and correction of the erosion of soils, beaches, and shores.

f. Protection of watersheds.

g. The location, quantity, and quality of the rock, sand, and gravel resources."

2.1.2 Open Space Element (Sections 65302(e) and 65560 et. seq.)

"An open space plan shall be prepared for the comprehensive and long-range preservation and conservation of open space land which shall include:

a. Open space for the preservation of natural resources including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for the ecologic and other scientific study; rivers, streams, bays and estuaries; and coastal beaches, lakeshores, banks of rivers and streams and watershed lands.

b. Open space for the managed production of resources, including but not limited to, forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for the recharge of groundwater basins, bays, estuaries, marshes, rivers and streams which are improtant for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.

c. Open space for outdoor recreation, including but not limited to, areas of outstanding scenic, historic, and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and areas which serve as links between major recreation and open space reservations, including utility easements, banks of rivers and streams, trails and scenic highway corridors.

d. Open space for public health and safety, including but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, floodplains, watersheds; areas presenting high fire risks; areas required for the protection of water quality and water reservoirs; and areas required for the protection and enhancement of air quality.

e. An additional category which may be considered is the designation of areas necessary to control urban form and prevent inefficient patterns of development."

2.1.3 Scenic Highways Element (Section 65302(h))

"A scenic highway element for the development, establishment and protection of scenic highways pursuant to the provision of the Streets and Highways Code.

This element provides for local planning of official and unofficial scenic highways. Official scenic highways are designated by the State Scenic Highway Advisory Committee after plans have been adopted and submitted by the local jurisdiction. Highways eligible for such designation are listed in the Streets and Highways Code Section 263. Official County Scenic Highways are also designated by the State Scenic Highway Advisory Committee on application from the local jurisdiction."

2.2 Permissible Elements

In addition to those elements mandated by the State Government Code, other elements relating to the management of environmental resources are permitted. The City of Lancaster has elected to prepare:

2.2.1 Parks and Recreation Element

It is the intent of the Parks and Recreation Element to expand upon the general provisions of the outdoor recreation subsection of the Conservation Element. Specific recreation needs of existing and future resident populations are to be identified and policies and programs developed to meet these needs. There is a direct correlation to the Land Use Element, as a park system must reflect the pattern and density of land use developments in the City.

2.3 Integration of the Elements

It is evident on review of the guidelines for the content of the elements listed above that there are many overlaps and they are highly interrelated. Many are dependent upon one another and enjoy the same subject areas. For example, the conservation and open space elements address soils and their capability and suitability for agricultural production. In recognition of the fact that the environment consists of mutually dependent and integrated systems, the State permits and encourages the consolidation of the elements which address resource management into a single, comprehensive element, the Environmental Resources Management Element (E.R.M.E.). Perception of the subsystems of the environment individually reduces one's ability to acquire a comprehensive understanding of the total environmental process. To realize effective management programs, a concerted effort is necessary which may supply systematic solutions to resource sensitivities and constraints.

2.4 The E.R.M.E. Concept

The Environmental Resources Management Element (E.R.M.E.) is an approach to conceptualizing issues and furnishing comprehensive solutions to environmental problems. It encompasses three of the elements mandated by state law and an additional related element, including conservation, open space, scenic highways, and recreation, in one consolidated element. The E.R.M.E. model recognizes the interdependence of the various sub-elements and yet allows for their description as discrete entities.

3.0 Environmental Resource Baseline and Issues

3.1 Introduction

Resources may generally be defined as some form of computable or measurable wealth accruing to the proprietor. Environmental resources differ somewhat, in that they are a result of the natural and man-made setting of a community and, to an extent, are shared by all people; first, by the residents of the community and secondly, by the greater population. While some forms of environmental resources are readily measurable, such as the number of acres of open space, others are more subtle, more diffuse and less susceptible to measurement. An example of the latter may be the quality of life as partially expressed in the visual, aesthetic, and cultural image of the City.

Environmental resources may be differentiated by categoires of origin into three general classes. First are those resources which are entirely natural in character, such as geology or fossils. Second are those categories which are the result of both natural features and human endeavors, such as hydrology. Finally are those forms of environmental wealth which result primarily from man-made efforts such as the visual, aesthetic, and cultural quality of the City. The following environmental resources have been identified and are described in the ensuing subsections:

a. Geology
b. Geomorphology
c. Soils
d. Hydrology
e. Plant and Wildlife
f. Cultural, Aesthetic and Visual
    1) Outdoor recreation
    2) Scenic highways
    3) Archaeologic and historical
g. Energy

Concerns regarding the conservation and management of each of these resources emerge because of four overriding issues. These include:

a. Some environmental resources are presently adversely degraded and threatened with extinction. Their tolerance levels have and continue to be exceeded. Air pollution, high levels of noise exposure, and rare and endangered species are representative of these problems.

b. Some environmental resources are or will be sensitive to the continued activities or introduction of man. Certain resources which may not be presently adversely affected, as their tolerance level has not been exceeded, may be so in the future with further land development. For example, random removal and destruction of the area's native vegetation, in particular the Joshua Trees, may threaten unique species.

c. Some environmental resources constrain and/or are hazardous to man's activities. Flood-prone areas, high noise exposure areas, and vegetation of a high fire hazard are representative of the potential risks to man and development.

d. Some environmental resources represent opportunities for man's use. Sand and gravel deposits can be economically extracted; water bodies and large open areas can be used for recreation; areas of good soil can be used for agricultural production; a number of highways with long vistas could be used as scenic highways.

Because of these, it is necessary to develop and enforce strategies for the conservation and management of the area's resources. The following delineates the history, current status, and problems and opportunities associated with each resource. This baseline data has been updated and is current to 1979. Since natural land forms and the resources therein cut across arbitrary political jurisdictions, many are described in the context of their greater regional setting. Figure 1 depicts the location of the City and its planning area in the context of the regional setting.

City Boundary and Sphere of Influence

Figure 1

3.2 Geology

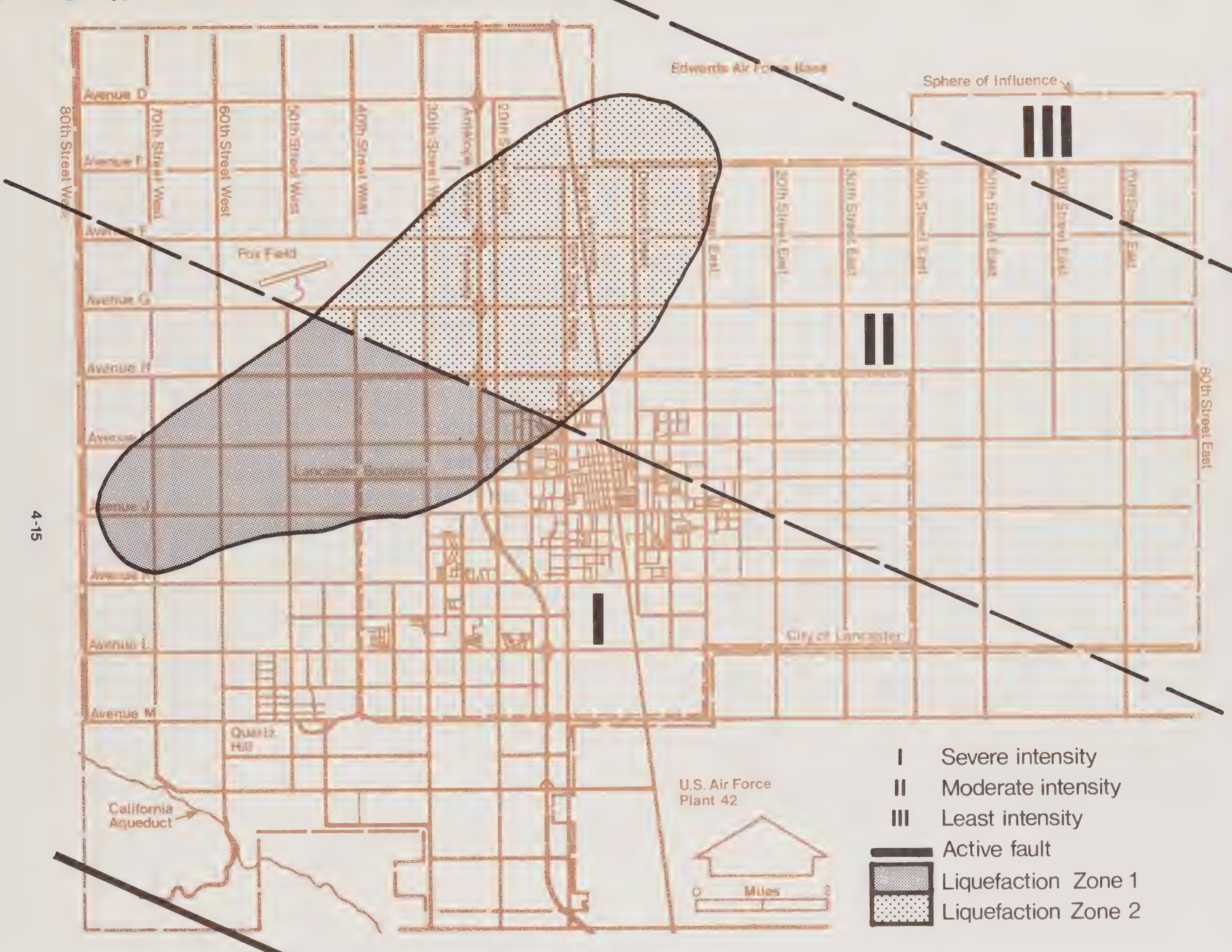
Geology is the science of the earth, its history, evolution and composition, as well as the processes by which it is continually changing. By understanding how the earth was formed, and what forces alter its crust, the earth scientist (geologist, engineer or seismologist) can relate natural hazards, such as earthquakes and landslides, to the safety of man and his artifacts.

The City of Lancaster lies within the southwest portion of the Antelope Valley and the western edge of the Mojave Desert. It is a geologically dynamic area, at the western edge of a moving plate in the earth's crust. Defining this boundary of this area is the San Andreas fault. Branching from the San Andreas fault and defining the northwest boundary of the valley is the Garlock fault (Figure 2). Consequently, the physiography of the area has been determined by a long history of periodic faulting, folding and uplift, rather than from the influence of differential erosion.

Rocks of the region may be divided into three main groupings, generally prevalent in the western Mojave Desert region: crystalline rocks of Pretertiary age, pyroclassic, volcanic, and sedimentary rocks of Tertiary age; and alluvial sedimentary deposits of Tertiary and Quarternary age (roughly encompassing the last one million years). The first two groups consist of hard, consolidated materials from the mountains bounding the area and the rocky buttes that penetrate up through the valley floor. The third group is the unconsolidated alluvial deposits, formed in the wash areas of the lower foothills and stream beds that comprise most of the valley floor. Beneath this alluvium lie consolidated rocks that are equivalent to the Tertiary and older materials forming the San Gabriel and Tehachapi Mountains.

3.2.1 Geologic History

The geologic history of the region in which Lancaster is located is long and complex. Its present geologic structure and topography, however, can be viewed in light of a relatively simple pattern of past events. Prior to Tertiary time (i.e., up to about 65 million years ago), the region was subject to deposition of sediments during various periods. (Table 4.1 depicts the geologic time scale showing age for formations and fault classification.) Rocks that are now exposed in the mountains were buried to depths of several miles. High pressure and



Faulting and Seismic Zones

Figure 2

TABLE 4.1

GEOLOGIC TIME SCALE SHOWING AGE OF FORMATIONS AND FAULT CLASSIFICATIONS

RELATIVE GEOLOGIC TIME				ATOMIC TIME (in millions of years)	
Era	Period		Epoch		
Cenozoic	Quaternary		Holocene	-- .011	ACTIVE FAULTS*
			Pleistocene	-- 2-3	
	Tertiary		Pliocene	-- 12	
			Miocene	-- 26	POTENTIALLY ACTIVE FAULTS
			Oligocene	-- 37-38	
			Eocene	-- 53-54	INACTIVE FAULTS
			Paleocene	-- 65	
Mesozoic	Cretaceous		Late Early	-- 136	
	Jurassic		Late Middle Early	-- 190-195	
	Triassic		Late Middle Early	-- 225	
Paleozoic	Permian		Late Early	-- 280	
	Carbon-iferous Systems	Pennsyl-vanian	Late Middle Early		
		Mississip-pian	Late Early	-- 345	
	Devonian		Late Middle Early	-- 395	
	Silurian		Late Middle Early	-- 430-440	
	Ordovician		Late Middle Early	-- 500	
	Cambrian		Late Middle Early	-- 570	
Precambrian				3,600+	

Note: Bedrock formations underlying the study area represent the entire span of the geologic time scale. Some periods within the Paleozoic Era may not be present.

*Note: As defined by policies and criteria of State Mining & Geology Board.

temperature changed them into harder rocks, such as the "schists" and "gneisses" now seen. In addition, deep-seated igneous-plutonic activity in the earth's core led to the intrusion of molten materials, which crystalized to form granitic rocks. Following these events, a general uplifting of this portion of the earth's crust, with consequent erosion and removal of over-burden, raised these mountain rocks to relatively shallow levels beneath the earth's surface.

Roughly 30 million years ago, the area underwent renewed movements, accompanied by volcanic activity and intrusive events at greater depth. Uplift caused continued erosion and redeposition of some of the rocks as sediments. It is believed that the Garlock and San Andreas faults may have formed or become active at this time, in association with uplift.

As time proceeded, volcanic activity ceased, but continued erosion of the complexly faulted Tehachapi and San Gabriel Mountains produced a thickening pile of Middle and Late Tertiary clays, sands, and gravels, most of which became buried deeply and long enough to become consolidated into hard rock. Activity along the Garlock and San Andreas fault zones continued, with motion occurring along many sub-parallel faults in these zones.

The most recent uplift of the San Gabriel and Sierra Pelona Mountains has resulted in the extensive erosion. Material that has been continually eroded from these mountains has accumulated on the lower parts of the desert. Coarser-grained sediments have concentrated themselves closest to the mountains; finer-grained silts and clays have been carried furthest into the valley. Variations in the rate of uplift and climatic fluctuations have produced a complex layering of coarser and finer-grained materials in the sedimentary pile. This erosion and deposition is continuing and has progressed so far that highlands and buttes in the valley region are largely buried and isolated from one another. Young, continuously forming alluvial fans along the valley margins are the result of the continuing erosion.

3.2.2 Mineral Resources

Mineral resources are non-renewable deposits of economic value that are used for manufacturing, construction, or trade. Historically, in the corporate limits of Lancaster, no significant mineral deposits have been

found or have been economically produced. In the foothills of the extreme southwest portion of the City's planning area, in the vicinity of 40th Street West and the proposed Rancho Vista development (City of Palmdale), limited mining for gold has occurred. As in many other areas of the San Gabriel Mountains, mining activities produced some, but relatively little, ore, and operations have been inactive for decades.

The most significant resource extraction activities in the region are for the extensive sand and gravel deposits in the floodplains and washes extending northerly from the San Gabriel Mountains. Currently, these operations are conducted in the floodplains of Little Rock and Big Rock Creeks, to the southeast of the City and its sphere of influence. As estimated by the California Division of Mines and Geology (CDMG), these operations yield approximately 2,100,000 tons of rock products each year. This is one of the largest such resources in the state. The washes and creeks which cross the City's planning area are broad and shallow, and are estimated to contain considerably less commercial sand and gravel deposits. However, they still represent a potential future resource.

3.3 Geomorphology

Geomorphology is the discipline which furnishes man with a knowledge of the surface features of the earth. The geomorphology of an area corresponds closely to its geology, but often is more discrete, and there may be a variety of geomorphological types in proximty to one another.

Geomorphologically, the City of Lancaster and its planning area are in one distinct area: the desert "basin" extending northward from the San Gabriel Mountains. It is a part of the greater Antelope Valley, which is in the extreme southwestern part of a large geographic region, generally known as the Mojave Desert. Despite its name, it is not a valley in a true sense; instead it is a desert "basin", embracing about 700 square miles of what might be termed the "valley floor", as well as an additional 800 square miles of drainage areas. The Antelope Valley is bounded on the north by a chain of buttes that flank the Soledad Mountains; on the south by the high mountains of the San Gabriel-Sierra Pelona ranges; on the east by an inconspicuous upland, part of which bears the name Long Buttes; and on the west by the Tehachapi Mountains. The mountain ranges on the south and west are rugged, with relief in some places exceeding 10,000 feet.

Within its corporate limits, Lancaster is essentially flat. The only geomorphic feature which deviates from the flatness is a small uplift, known as Quartz Hill, at the extreme southwest corner of the City.

In the City's planning area, similar geomorphological conditions prevail. To the north and east continues the unbroken, low gradient, desert plain. To the west, the plain rises gently toward the distant confluence of the San Gabriel-Sierra Pelona Mountains. The extreme southwestern portion of the planning area encompasses the foothills of these mountains and is characterized by moderate and irregular slopes.

3.4 Soils

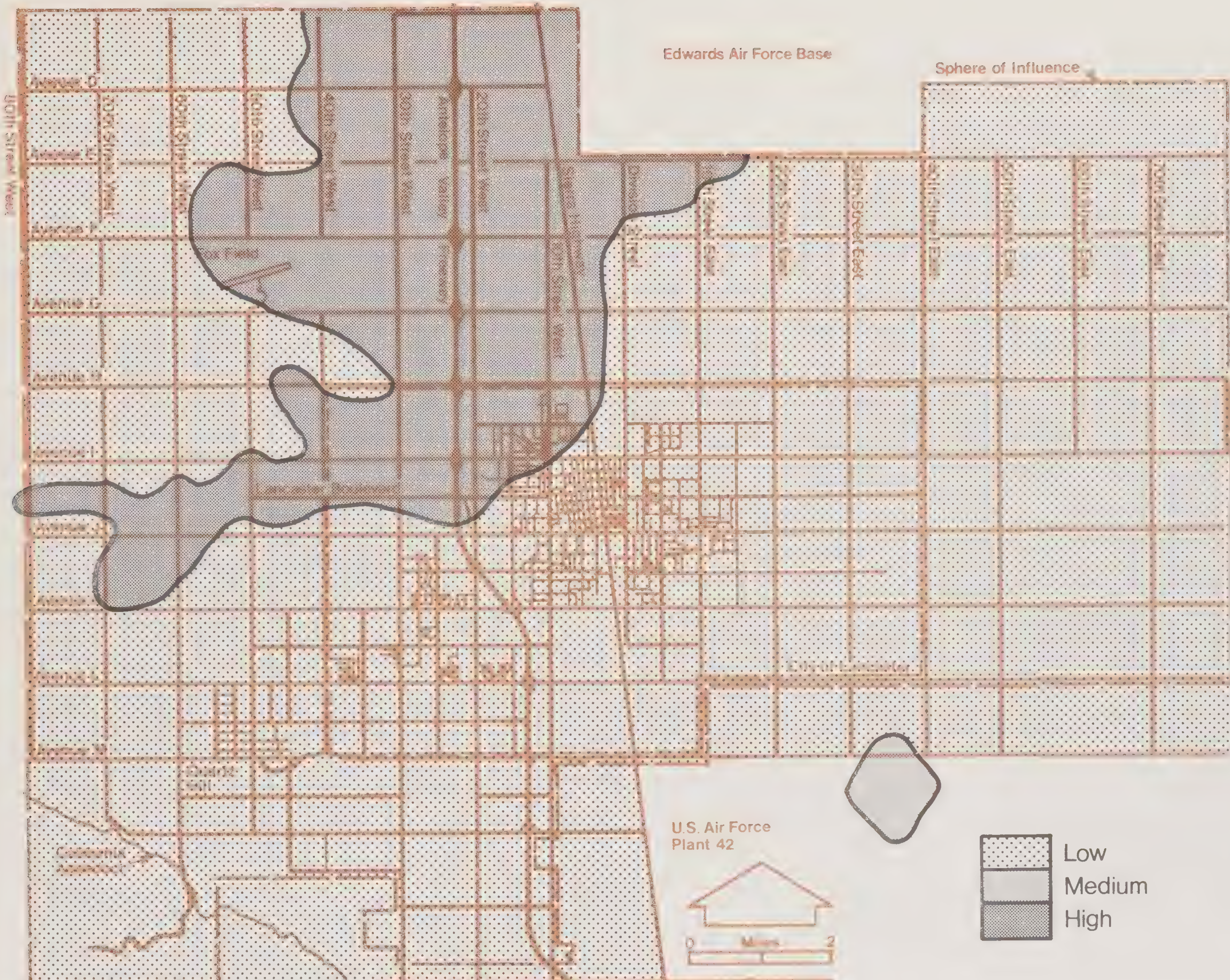
Soils are formed by the interaction of moisture, wind, and plant and animal life and are deposited above the structural geologic formations. Soil is not a lifeless, unchanging layer, but soil formation is a continuing, dynamic process influenced by climate, landform, and vegetation changes. Comprising soil are mineral and organic particles, while the underlying material usually is all mineral matter.

As described, the soils of Lancaster and its planning area have resulted from the violent uplift of the Sierra Pelona and San Gabriel Mountains and their subsequent erosion. These alluvial deposits consist of coarse-grained sediment intermingled with organic matter close to the foothills, in the City's planning area, and depositions of finer-grained silts and clays in areas away from the mountains in the City's corporate area. Generally, the northwest area of the City and its planning area is characterized by its very poor soil.

Concerns associated with the soil types found in Lancaster and its sphere of influence include its (1) shrink-swell potential, (2) erosion hazard, (3) limitations on septic tanks, (4) subsidence, (5) hydrocompaction capability, (6) liquefaction potential, and (7) ability to support agricultural production. Land capability maps have been prepared by the Soil Conservation Service (S.C.S.) of the United States Department of Agriculture to display these concerns and are discussed in the following sub-sections.

3.4.1 Shrink-Swell Potential

Shrink-swell potential of soils is defined as the relative measure of the propensity of the soil to swell when wet and shrink when dry. The amount of swell is related primarily to the presence and amount of certain types of clay. Three ranges of shrink-swell potential have been delineated by the S.C.S.: low, moderate, and high, and are depicted on Figure 3. Highly expansive soils can cause substantial damage to building foundations, highways and other surface structures. However, these effects can be minimized or eliminated (particularly in areas of moderate shrink-swell) provided that structures are engineered in accordance with existing building code requirements. Construction costs, consequently, will be higher in such areas.



Shrink-Swell Potential

Figure 3

Most of the City of Lancaster is characterized by soils of low shrink-swell potential which do not represent a problem for foundation construction. An exception is the area north of Lancaster Boulevard and west of 10th Street West, where the soils are classified as highly expansive and warrant special design considerations.

Shrink-swell conditions in the City's planning area are similar to that of the corporate limits. Most areas exhibit low potential. High shrink-swell potential is found in the general area between Avenue I and Avenue J to 75th Street West and north of the City between 40th Street West and Sierra Highway.

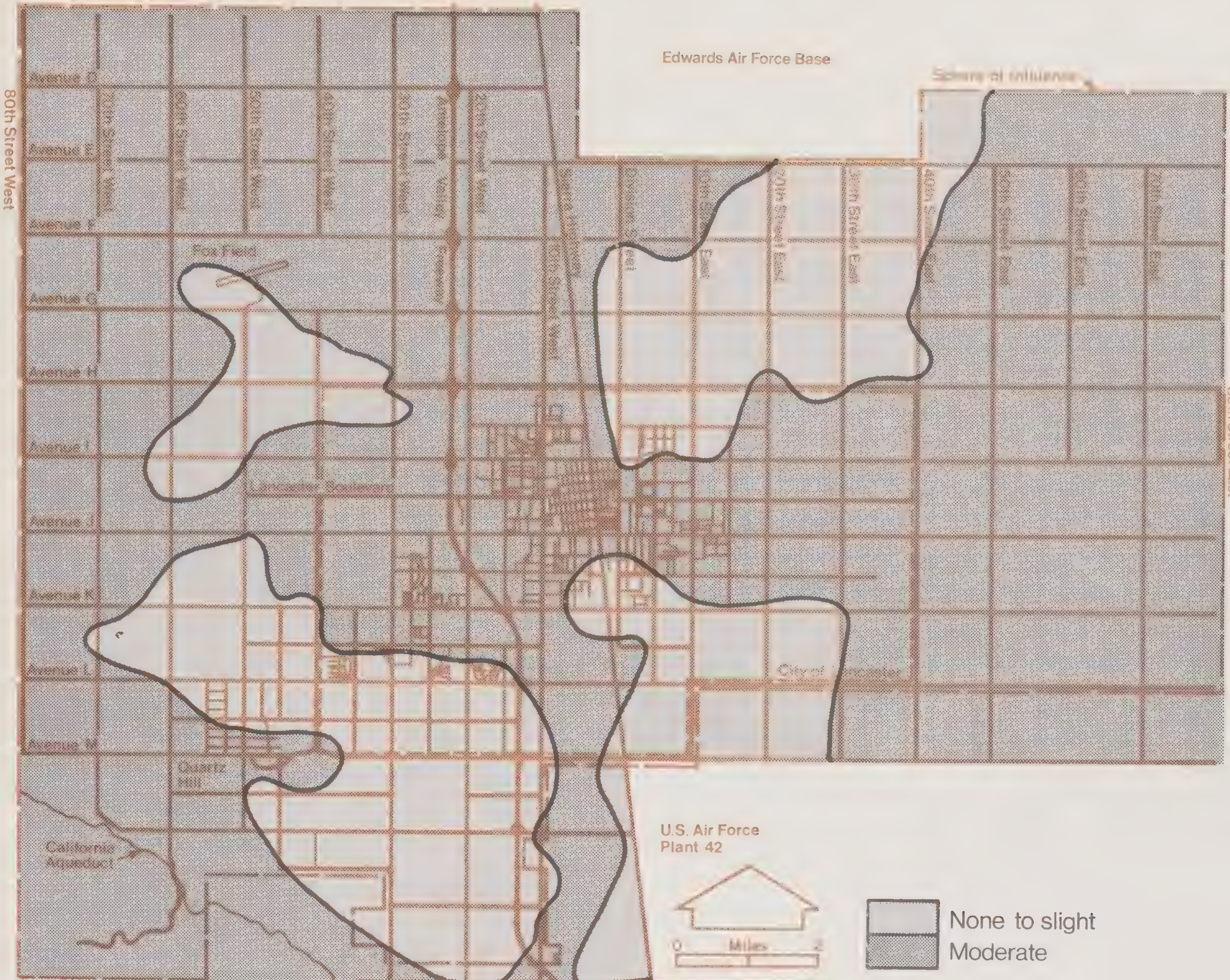
3.4.2 Soil Erosion Hazard

Land erosion is the process by which soil is removed from one area and transported to other areas, primarily by wind and moving water. Depending upon soil composition and consolidation, certain soil types will be more prone to erosion (such as formation of rills, gullies, and canyons) than other soil types. Evaluating erosion potential is important in determing hazards to existing and proposed development, as well as costs that would result from corrective measures. Four classifications of erosibility have been defined by the S.C.S. and are illustrated on Figure 4.

Soils in most of the City are classified as slightly or moderately erosible. Since the City is basically flat, erosion results primarily from the intense winds which periodically blow across the desert floor and the seasonal runoff from rainstorms in major drainage courses.

At times the blowing dust and soil has been a significant problem. Historically, windbreaks were planted in the southwest portion of the City's planning area to impede the wind's velocities and their concomitant dust. Abandonment of agricultural operations left many areas barren and has compounded this problem. In urban areas, loose topsoil is blown from vacant lots which have been cleared of weeds and other vegetation.

Small areas of the City's planning area, along the foothills, exhibit high and very high erosibility. Winds in these areas aggravate the problems of blowing dust.



Soil Erosion Hazard
Figure 4

3.4.3 Septic Tank Filter Field Limitations

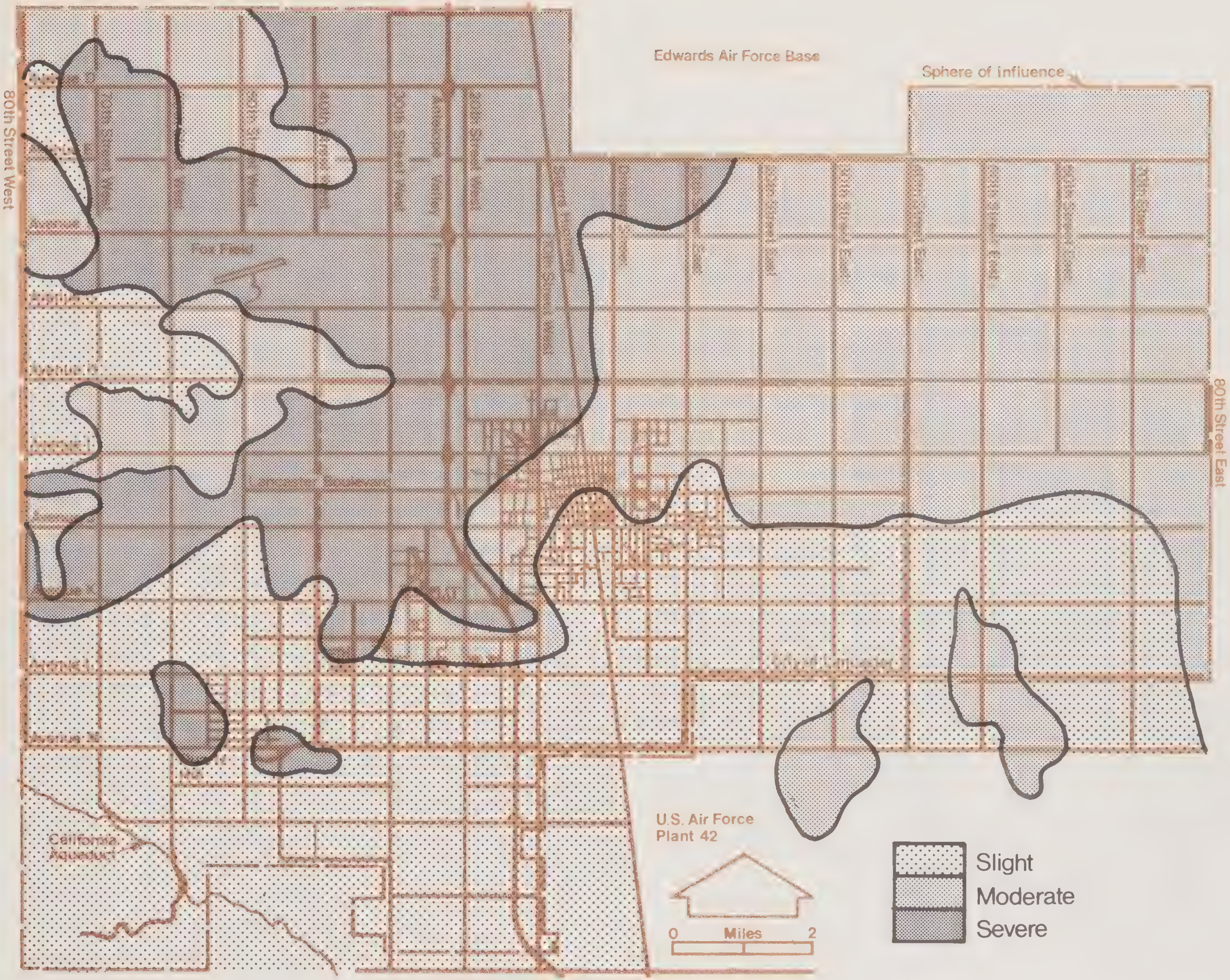
Soils are classified according to their ability to absorb and drain water. This ability is a function of soil grain size, uniformity of grain, compaction, and soil depth, among other factors and is often referred to as "permeability". Generally, there is a direct correlation of the permeability of soils and the feasibility of on-site sewage disposal systems, such as septic tanks and seepage pits on leach lines. Coarse-grained soils such as clean gravel or sand, will percolate better than silt or clay. The three percolation ratings which have been assigned by the S.C.S., which also take into account water table depth, are: good (slight limitation), moderate (moderate limitation), and poor (severe limitation). These classifications are illustrated on Figure 5.

Most of the north and northwest areas of the City of Lancaster are characterized by soils of moderate and severe limitations on septic systems. Urban classes of development in these areas will almost certainly require connection to sewage disposal and treatment systems. As most of this area is within or immediately adjacent to developed sanitation districts, with excess capacity, this should not constitute a significant problem.

Development within the City's planning area, outside of the sanitation districts, to the west and north will be impacted by the moderate and severe septic limitations of the soil. Of particular concern are those areas with severe limitations; west of the City between Avenue I and Avenue K and north of the City between 70th Street West and Sierra Highway.

3.4.4 Subsidence

Subsidence is the gradual sinking of an area due to a decrease in subsurface pressures. Its occurrence is related to the presence of compactable soils to depths of hundreds or thousands of feet; the nature of the surface soil has no direct correlation with the subsidence potential. Subsidence is generally related to over-pumping of water wells or the depletion of oil fields. It is usually detected only by very careful surveying over a period of many years, inasmuch as an elevation difference of a few feet may occur over many square miles. It cannot be predicted accurately unless detailed subsurface data, including soil characteristics



Septic Tank Limitations

Figure 5

and an estimate of fluid reserves, are available. For purposes of this study, only areas of known historic subsidence were considered. An area centered around and east of the City of Lancaster has exhibited the greatest subsidence in the Antelope Valley (Figure 6).

Four zones of subsidence are delineated, based on rates for a recent five-year period. These zones are: low, low-moderate, high, and very high. Their boundaries correspond with subsidence contours of the Los Angeles County Engineer.[1]

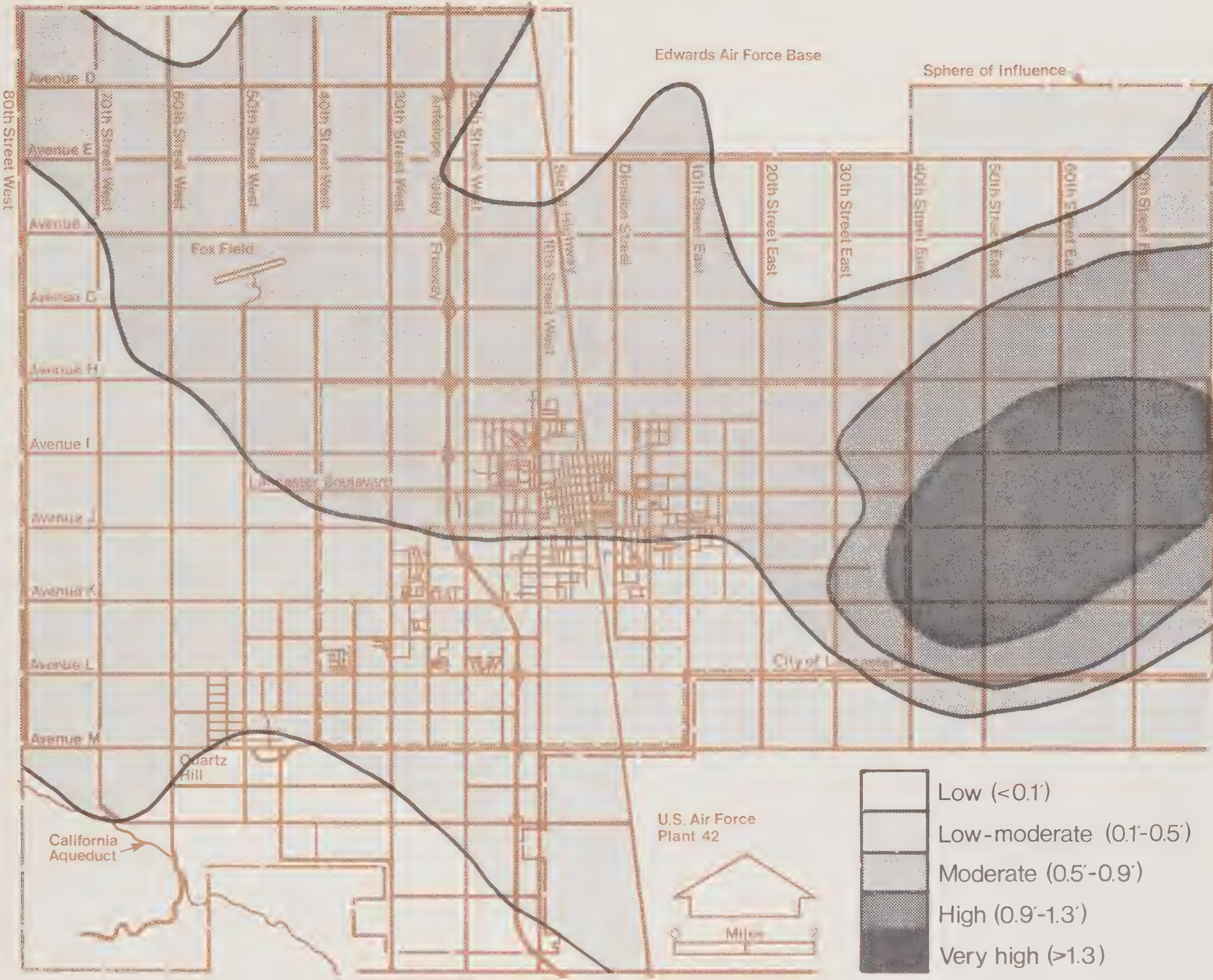
Since 1929 total maximum subsidence in the surveyed area has been approximately 3.4 feet. The latest maximum rate of movement in the area is estimated at 0.3 feet per year. In 1967, it was approximately 0.1 feet per year. In most cases, subsidence is not severe enough to cause significant damage to developments or necessitate special land use restrictions. If detected early, detrimental effects can usually be minimized or the cause neutralized. However, the maximum subsidence magnitudes that have occurred in the eastern and northern Lancaster area could significantly affect drainage and sanitary structures and should receive specific attention in future studies.

3.4.5 Hydrocompaction

Hydrocompaction is a shallow form of subsidence, caused by the addition rather than the extraction of fluid. It has been noted in the desert and semi-arid regions of southern California, particularly in the alluvial areas in the northwest portion (north of Lancaster Boulevard, west of the Antelope Valley Freeway) of the City. However, the hydrocompaction potential of an area cannot be adequately evaluated without subsurface soil data which has not been aggregated at this time.

Hydrocompaction usually occurs in relatively loose, open-textured soils above the water table. Once water is introduced by a rise in the water table, the soil loses its strength and consolidates under its own weight. This form of subsidence can be particularly damaging to structures because it can result in large differential settlements within short distances. It can also result in the phenomenon known as settlement. In settlement, the weight of fill placed on top of the soil causes

[1]Los Angeles County Engineer, 1974, Land Subsidence, Antelope Valley Area of Los Angeles County.



Subsidence

Figure 6

compaction of the subsurface soils, even though there is no change in the groundwater conditions.

3.4.6 Agricultural Capability

Lancaster was settled for its abundant water supply and surrounding areas of soils exhibiting a high suitability for agricultural production. From the 1870s to the 1950s, the area's principal product was agriculture. Today, due to declining water tables, the high cost of energy, and economics of production, farming is non-existent in the City and limited in its planning area.

a. Agricultural History

A perspective of the current problems can be gleaned from a review of the history of agricultural production in the greater Antelope Valley. Its history as an agricultural region began in the 1880s. Prior to this, only scattered farmsteads existed near the southern ridges, along the San Andreas rift zone, with seasonal cattle grazing in the west valley. In 1887, the Wright Irrigation Act gave rural areas municipal-like power to construct or purchase and operate irrigation systems. This aided the formation of agricultural colonies and irrigation districts in the southern fringe. This Act, together with the influx of migrants to California on the recently completed transcontinental railroad, and the introduction of the hydrostatic well in 1883, permanently altered the nature of Antelope Valley agriculture.

After 1893, the region entered a dry cycle that withered thousands of acres of dry-farmed land in the west valley. In addition to this casualty, only five thousand of the 12 to 15 thousand acres of orchard (mainly almonds, olives and prunes) remained by 1910. After this drought, during the early part of the twentieth century, the modern agricultural pattern was established.

The modern agricultural pattern (wheat in the west valley, alfalfa around the central fringes, and orchards in the southern portions) is a result of soil limitations and a reliance on irrigation. Alfalfa was grown away from the higher alkaline soil zones surrounding Rosamond Dry Lake. When gasoline pumps became available, the agricultural area began to

extend to the west, away from the artesian well zone. This trend was further encouraged by the introduction of electricity and electric pumps in 1917. Orchards continued to grow on the southern fringe slopes principally around Quartz Hill and Littlerock. Thus, the Antelope Valley remained an agricultural valley for the first half of this century.

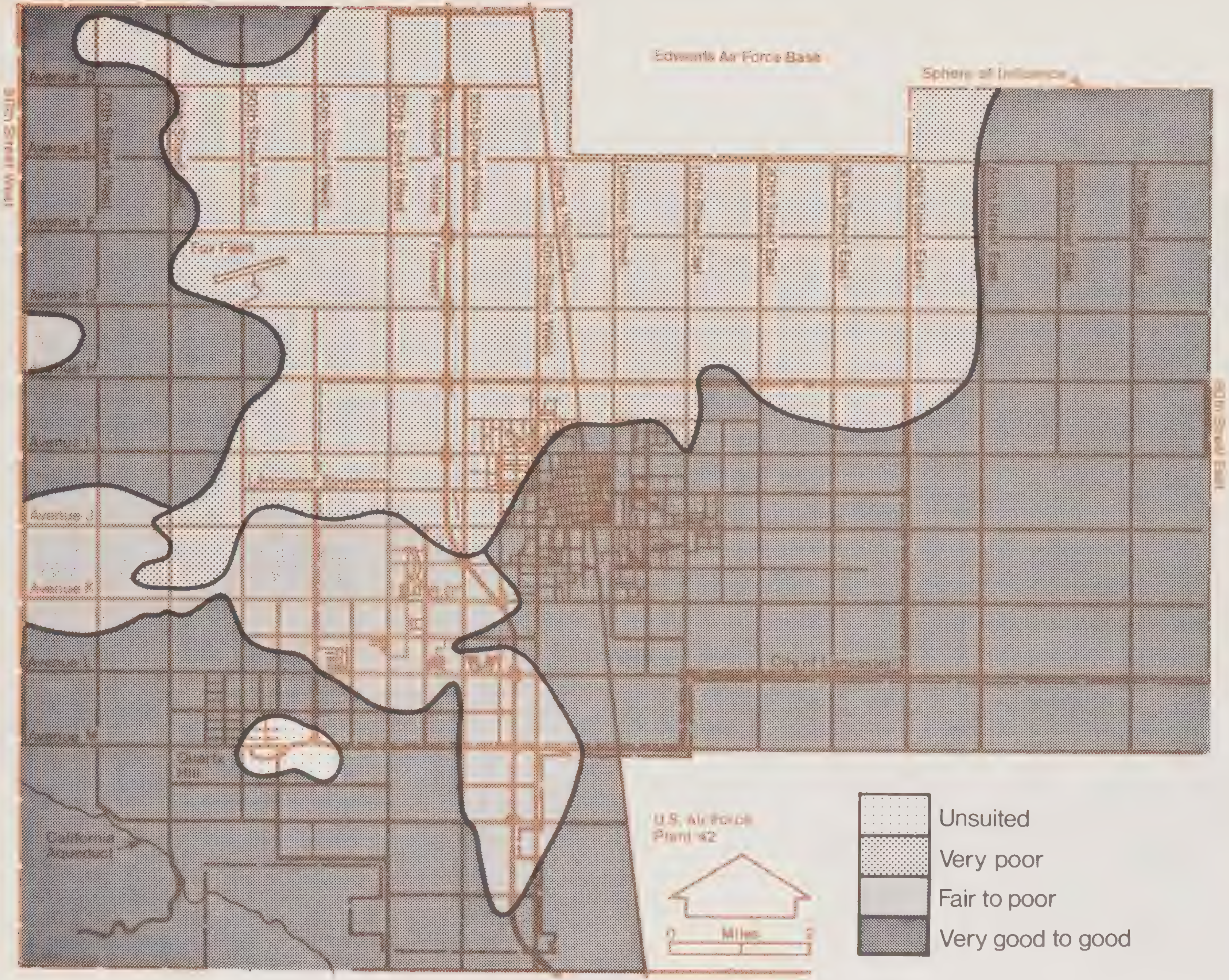
During the 1950s, the agricultural identity of the Antelope Valley began to decline as the aircraft industry offered non-agricultural employment, and a trend toward increased urbanization began. This trend affected the agricultural sector through higher land prices, subsequent property taxation, and higher water costs. Irrigation plantings achieved their peak in 1954, with a general decline afterward. In many cases, land once employed for farming has not been converted to urban uses, but has gone fallow.

Areas to the east and southwest of the City of Lancaster and its planning area, which were once actively used for alfalfa and other crop production, now largely lie dormant. Costs for water, seed fertilizers, labor, fuel, machinery, bailing wire, and other supplies has made it uneconomical for most producers to continue their operations.

b. <u>Suitability of the Soil</u>

Though production is non-existent, the soils of approximately 50 percent of the City's area are classified as good to very good by the S.C.S. for agricultural production (Figure 7). Generally, the most productive soils are found east of 10th Street West. Areas least suitable for agricultural prodution are found in the northwest portion of the City (north of Avenue J and west of Sierra Highway) where soils are characterized by their high alkalinity and sand composition.

In the City's planning area, large areas to the south, west (west of 60th Street West), and east exhibit good to very good suitability for agricultural production. A broad plain of very poor soil extends from 60th Street West and Avenue J north to Edwards Air Force Base, bounded in the southeast by Avenue I and 50th Street East.



Suitability for Farming
Figure 7

3.5 Hydrology

Water of the ocean, air and land moves in a continuous cycle that involves changes in place and physical state. This, the hydrologic cycle, involves the evaporation of water from the ocean; its transport across water and land; subsequent condensation and dispersal on land; and its evaporation, storage in surface or subsurface bodies, and transport to the sea through streams and rivers.

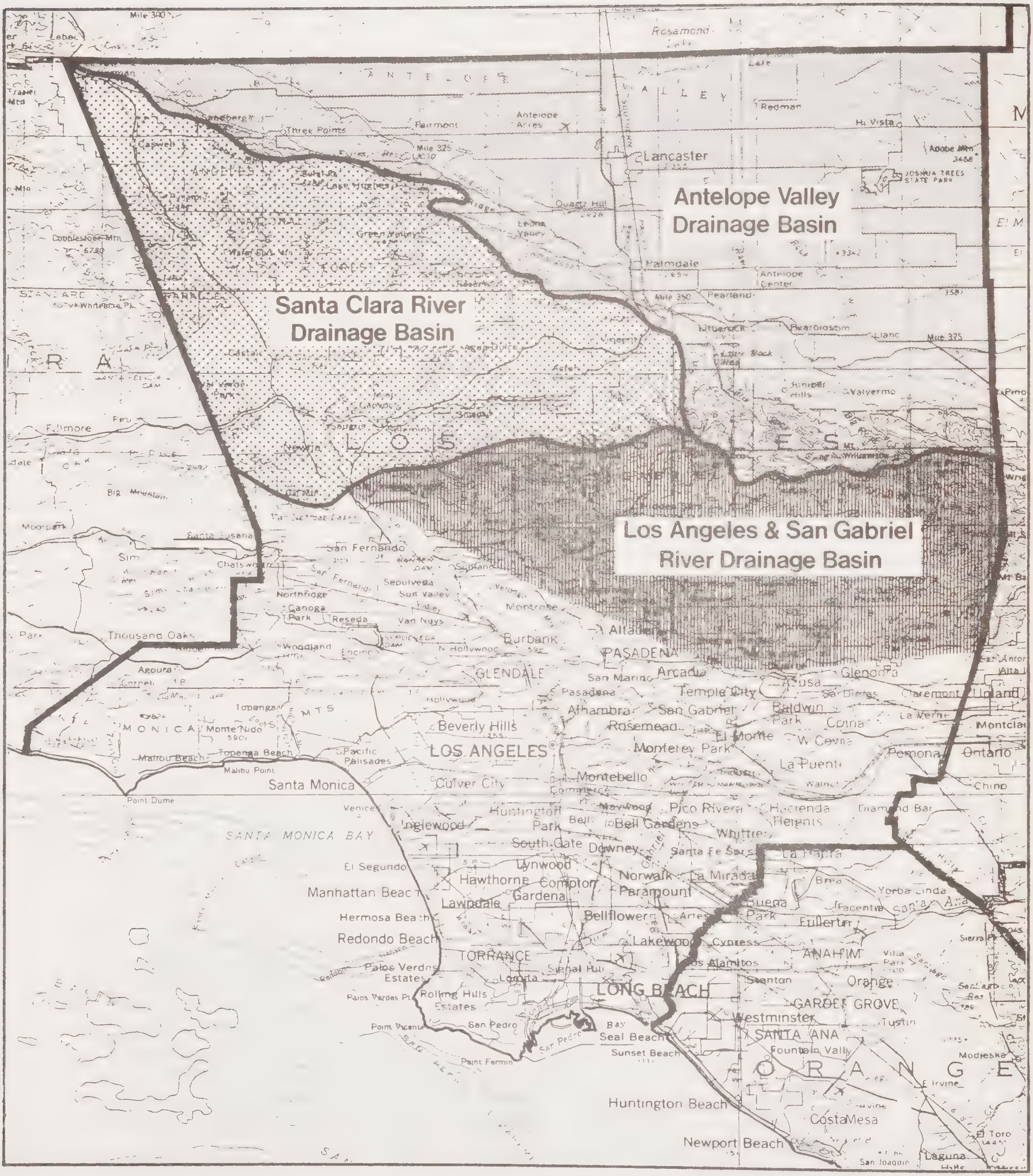
Two major hydrologic issues are evident in the City of Lancaster and its planning area. One is the access to water for domestic and agricultural consumption. As most of southern California, the area's semi-arid to arid desert climate does not produce sufficient rainfall to support the needs of its population. Consequently, it is necessary to import water which has been collected elsewhere. Intermittent natural surface water resources and heavy reliance on a declining water table have compounded the problem. Historically, only local rainfall has entered the area's hydrologic cycle since most aqueducts and storage facilities were destined for use by population outside of the Lancaster region. Supplemental water is obtained from the Department of Water Resources aqueducts in the west valley. Currently, this accounts for about 40 percent of the City's supply of water.

A second concern is the periodic heavy runoff and sheet flooding from the San Gabriel and Sierra Pelona Mountains. An extensive portion of the City and its planning area is subject to adverse conditions as the low gradient of the land inhibits adequate drainage, and poor soils in many areas inhibit adequate percolation.

3.5.1 Surface Water and Watersheds

Lancaster and its greater planning area are located in the Antelope Valley drainage basin from the San Gabriel and Sierra Pelona Mountains (Figure 8). During periods of the rain-laden winter storms, these mountains attract moisture and divide the runoff between the inland desert area and the ocean. Runoff, occurring principally during the winter storm season, is accelerated by surrounding steep terrain. Hillside chaparral vegetation is a voracious consumer of moisture, and, as a consequence, periodic fires in the watershed increase the level of surface water flow and sedimentation.

In the Antelope Valley drainage basin, surface water does not appear as perennial streams and only in the San



Drainage Basins

Figure 8

Gabriels do streams flow all year round. Streams like Big Rock, Little Rock and Pallet Creeks flow in the foothills, but they disappear into the highly permeable valley fringes. In the valley floor itself, runoff follows storms. This may occur when washes temporarily fill as sheet flooding. Generally, runoff is at first confined to washes in the alluvial fans surrounding the valley, but then it distributes itself and spreads, abandoning old channels and cutting new ones. At lower elevations, the channels are faint and sheet wash is prominent. Farther out onto the valley floor, the heavy and fine-textured transported soils are relatively impervious. Water forms ponds there for weeks during the winter, but evaporates quickly during the summer. Only after very heavy storms does water reach the playas.

Artesian springs once flowed in the area, but the last flow ceased in the 1930s. Non-artesian springs occur on the valley floor around Antelope, Fairmont, and among a few of the eastern buttes. The buttes, adjacent to each spring site, act as rock dams that arrest the flow of groundwater from the valley fringes and confine it closer to the surface.

Although the surface water is seasonally variable, only one reservoir (part of Antelope Valley Water and Irrigation Districts) presently serves to mitigate seasonal disruptions. Palmdale (or Harold) Reservoir is a part of the Palmdale Municipal Water District located directly south of that City, and has a capacity of 4,250 acre-feet. Little Rock Reservoir, approximately five miles up Little Rock Creek Canyon, has a capacity of 4,700 acre-feet.

Crossing the southwest corner of the planning area, along the foothills, is the California Aqueduct. A part of the statewide California Water Project (CWP), this is the only aqueduct in the area.

3.5.2 Groundwater

Water percolates through soil and geologic units, being pulled by the earth's gravity, until it reaches bedrock or penetrates deposits of alluvium. It then forms layers, or strata, known as aquifers. From these aquifers, water may be pumped to the surface through wells. The City of Lancaster and its planning area are located and draw water from the Lancaster sub-unit of the Antelope Valley aquifer. Since agricultural activities began in the valley, the level of the groundwater

has been continuously declining. Figure 9 illustrates the groundwater levels experienced in 1975.

a. Antelope Valley Aquifer

The Antelope Valley is an inland basin of the southwestern section of the Mojave Desert. In 1954, according to U.S.G.S. estimates, the water reserve was 10,000 acre-feet. This aquifer was formed by uplifting of the San Gabriel and Sierra Pelona ranges, the Tehapachi Mountains, and the Soledad Mountain upland. Subsequent erosion resulted in the deposition of sediments in the Mojave Basin, resulting in the placement of up to 2,000 feet of alluvium and other deposits in the basin.

Older alluvium deposits are found in beds of silt, sand, gravel, and boulders that are characterized by their ability to store and yield water. The alluvium is interbedded with other deposits, characterized by poor water bearing properties. The complex interbedding, frequently found at depths greater than 100 feet, has been exposed in the west Antelope Valley. Continual building of impervious layers has resulted in a perched water condition in many areas surrounding Lancaster.

Younger alluvium deposits make up the alluvial fans. At the base of the San Gabriel Mountains, these deposits are up to 100 feet thick. Deposits of lesser thickness can be found as far into the basin as the playas. These deposits act as conveyors of water, but generally do not store a significant quantity. Silts and clays that are not deposited in the alluvial fans are transported to lower sections of the basin by infrequent major storms. The result of this deposition is the creation of dry lake beds, or "playas". The playas may be up to 100 feet in depth and do not yield significant quantities of water.

The Mojave Basin consists of the Fremont and Lancaster Basins, which are divided into a total of 15 sub-units. Sub-units have been isolated by differences in groundwater elevation (caused by faults or consolidated rock masses) and, in some instances, by convenient, arbitrary boundaries. The Lancaster Basin contains six sub-units that are wholly or partly in Los Angeles County. Largest of the Lancaster Basin's sub-units is the Lancaster sub-unit which supplies all of the pumped water in the City

Groundwater
Figure 9

and its planning area. Generally, the groundwater movement is northeast from the foothills of the San Gabriels to Rosamond and Rogers Dry Lakes. Distorted movement occurs due to pumping depressions at Antelope Acres, Hi Vista, Quartz Hill and Edwards Air Force Base.

b. Groundwater Recharge

The total annual recharge is the quantity of groundwater that can be consumed annually, without permanently lowering groundwater levels. For the Antelope Valley Basin, this has been estimated by U.S.G.S. at 76,000 acre-feet. This amount, which is five percent of the total annual precipitation in the basin, includes an annual recharge of 18,000 acre-feet to the Fremont Basin. The extent to which interbasin flow occurs is uncertain, although the two basins are connected through Rogers Dry Lake and Rosamond Hills. Lancaster Basin recharge is due to percolation of storm runoff in the alluvial fans of the Big Rock and Little Rock Creeks. Recharge rates are subject to fluctuation of winter rains. Occasional severe storms result in high runoff volumes that flow across the valley floor on impervious soils and are lost to evapotranspiration (114 inches per year). Palmdale Reservoir has been constructed to conserve a portion of this excess runoff.

c. Groundwater Quality

Chemical quality of the groundwater in the Mojave Basin is generally satisfactory for domestic use and irrigation, as well as most commercial and industrial uses. Total dissolved solids range from 200 to 800 parts per million (ppm), with concentration of 2,600 ppm near El Mirage, Rosamond, and Rogers Playas. Although present quality is satisfactory, there is a trend toward poorer groundwater quality, due to urban runoff, septic tank failures in the San Gabriel watershed, declining water tables, and the perched Lancaster condition.

d. Present Consumption

An overdraft in the Mojave Basin has resulted in declines in the groundwater table of 125 to 175 feet in Lancaster. Rates of decline range from one foot/year in non-pumping areas to 12 feet/year in existing pumping depressions. Draw-downs of 100 feet or more

are not uncommon during the summer pumping season. Water level decline in Lancaster area wells is illustrated in Figure 10. Overall consumptive use of the Mojave Basin water is approximately 147,000 acre-feet/year, resulting in an overdraft of 71,000 acre-feet/year.

There has been no record of any contamination (organic or pathogenic) of groundwater by surface water recharging in the study area. If stringent discharge requirements for waste water continue to be enforced, this is not expected to be a problem.

These declining groundwater resources are insufficient for the demands of agricultural and domestic use. Importation will continue to be necessary to support existing and future uses. However, it is likely that the total water resources available to support the population of the arid Southern California region, and the Lancaster area, will decrease. Loss of Colorado River water and the uncertainty of the construction of the peripheral canal augmenting the supply from northern California warrant the consideration of other measures. First, conservation practices must be employed at all times. The recent drought seasons of 1974 to 1976 demonstrate the concerns and impacts of the scarcity of this resource. Secondly, measures to replenish the declining groundwater supply should be considered. Vast quantities of water which run off across the desert floor from the San Gabriel and Sierra Pelona Mountains are lost each year. Systems constructed to capture this water and pump it into the groundwater basin should be considered.

3.5.3 Flooding

Flood-prone areas are designated by the Army Corps of Engineers, City of Lancaster Engineer, and County of Los Angeles Flood Control District as strips of land, usually along drainage courses, that may be subject to flooding (due to overflow or inundation) approximately once every 100 years. Their delineation is based on field observations of previous floods, topography, monitored mountain runoff, and aerial photography. Development in these areas is governed by special flood engineering provisions of the City's building code. These require that the elevation of a building site be at least one foot above the level of the "design flood" without raising the flood level on adjacent properties.

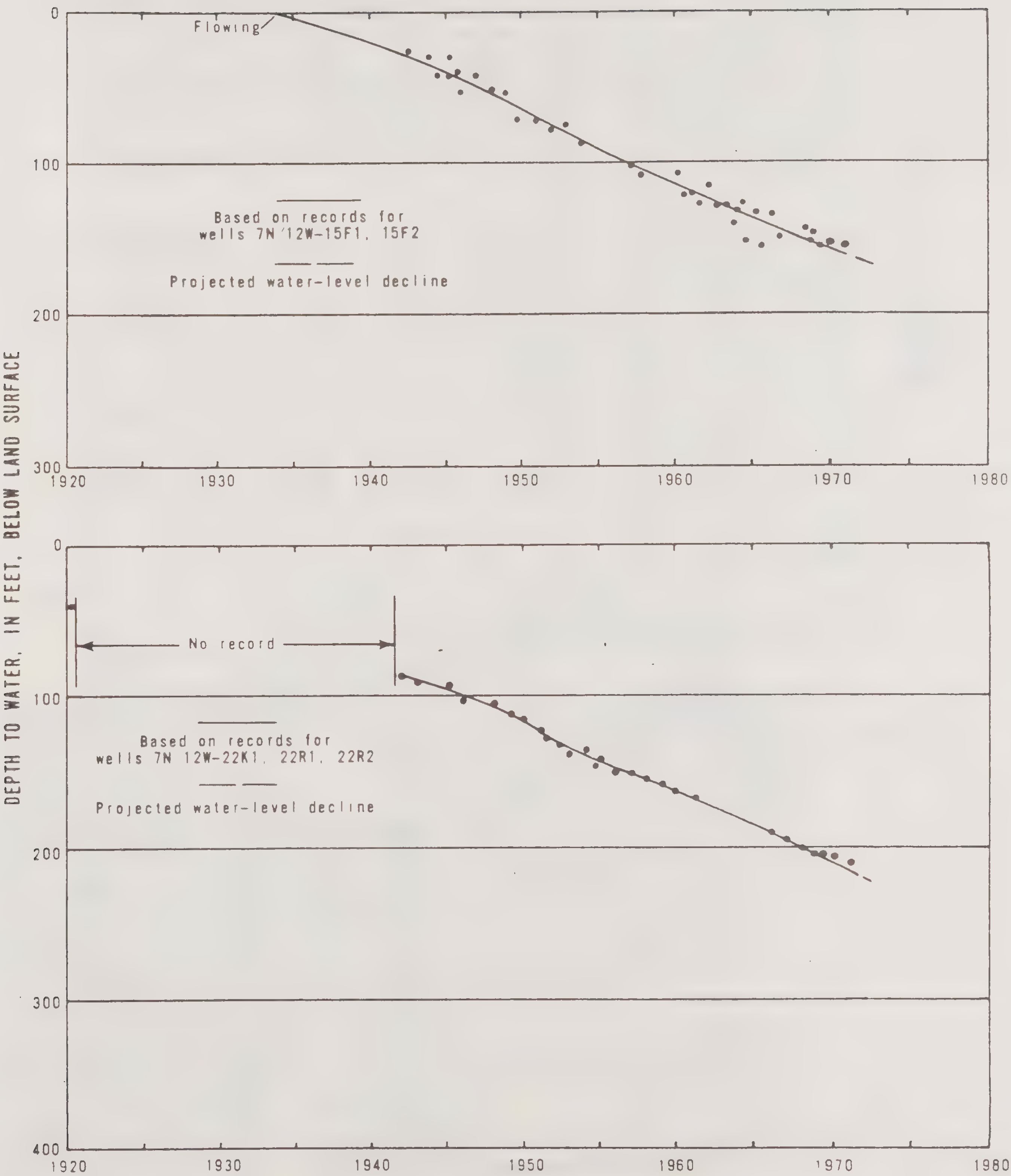


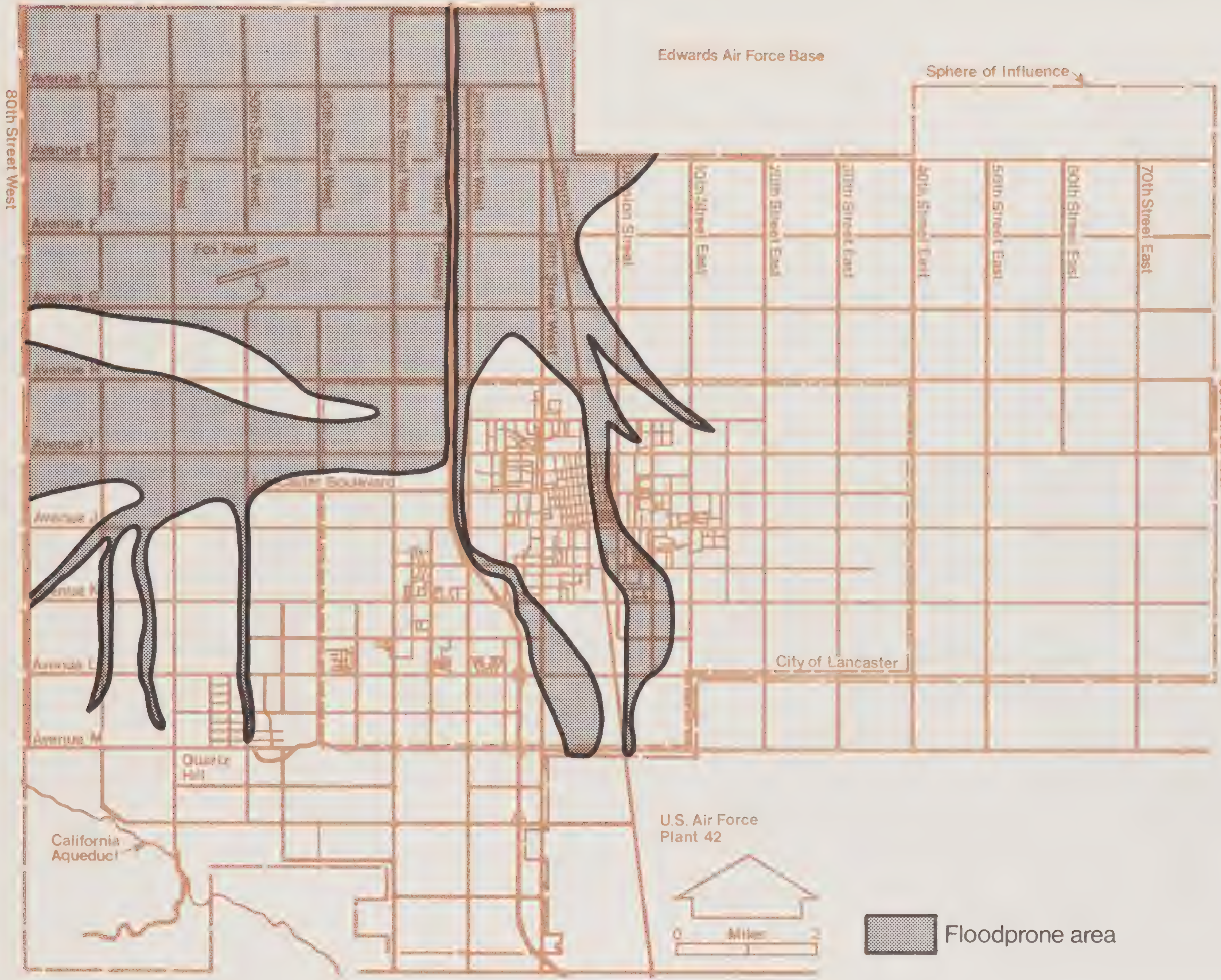
Figure 10
WATER-LEVEL DECLINE IN WELLS IN THE ANTELOPE VALLEY

Significant areas of the City and its planning area are subject to periodic flooding. Figure 11 illustrates the extensive drainage pattern which affects the area. Concentrated rainfall in the San Gabriel and Sierra Pelona Mountains in the winter season (December to March) and during intense thunderstorms in the summer results results in runoff from exposed, lightly-fractured rocks that are overlain with a very shallow, coarse and porous mantle.

Although faulting and deep weathering in the mountains act to retain moisture, steep canyon slopes and channel gradients concentrate storm runoff in high velocity, erosive flows. The flows quickly satisfy soil moisture deficiences then spread across alluvial deposits in new channels and/or sheet flow. Flooding spreads across the desert floor, aggravated by the area's fine sands, silts, and clays. Runoff velocity generally dissipates as it emerges from the mountain canyons and extends across the desert floor. Though considerable areas of the City and its planning area are subject to flooding, it is most often sheet flooding or low velocity. Flood waters will pond in many areas after a storm due to the area's slight gradient.

The City of Lancaster and its planning area are affected by the flooding of the following systems:

a. Amargosa Creek - This creek collects runoff from the northern face of the Sierra Pelona Mountains and the southern slope of both Portal and Ritter Ridges. It travels the length of the Leona Valley, beginning at the mouth of San Francisquito Canyon, and enters the Antelope Valley along Elizabeth Lake-Pine Canyon Road in the vicinity of the intersection of 25th Street West and Avenue Q. The creek travels north parallel to the Antelope Valley Freeway and divides into two flows between Avenues N and O. The west branch enters the City in the vicinity of 5th Street West and travels northwest to Avenue K, where it enters a channel constructed for the freeway. It continues along the freeway to a retention basin located north of Avenue H and west of 20th Street West. The eastern branch is diverted east of Sierra Highway, generally following a northerly course between the Southern Pacific Railroad and 5th Street East. At Avenue G, it merges with other flood waters.



Floodprone Areas
Figure 11

b. Anaverde Creek - This creek collects runoff from the Sierra Pelonas, in Anaverde Valley, and travels along Sierra Highway, southwest and northwest of the City of Palmdale; it flows into Plant 42, where it is collected in the Lockheed drainage channel and held in the Air Force retention basin. Overflow from the retention basin would flow due north along 20th and 30th Streets East and merge with other flood waters at Avenue G.

c. Little Rock Creek - Little Rock Creek collects runoff from the San Gabriel Mountains in Little Rock Canyon and travels west of the town of Littlerock in a northerly direction to Rosamond Playa. It crosses the eastern section of the City's planning area along 60th Street East, at Avenue L, to 40th Street East and 50th Street East at Avenue D.

d. Neenach Wash - This wash collects runoff from La Liebre Rancho in both Los Angeles and Kern Counties. The collected runoff travels due east, approximately one-half mile south of the Kern County boundary, until it merges with runoff from the Fairmont Wash in the vicinity of 90th Street West. At this point, the area that is subject to inundation widens, due to clayey hardpan soils, and encompasses an area of approximately 80 square miles. It enters the city along 40th Street West between Avenue H and Avenue I-4. It continues to the Antelope Valley Freeway and eventually flows to Rosamond Playa.

e. Fairmont Wash - This wash collects runoff from Board Canyon in Portal Ridge and from Fairmont and Antelope Buttes. Runoff moves toward the north, away from Antelope Buttes, then changes to an easterly direction at Avenue D and 150th Street West, moving along Avenue D. It merges with other flood waters at 90th Street West and progresses to Rosamond Playa.

f. Mira Loma (Portal Ridge Wash) - Mira Loma collects runoff from Portal Ridge and travels toward the east, along Avenue I, then turns north in the vicinity of 30th Street West to merge with other flood waters.

3.6 Plant and Wildlife Systems

Living things are arranged into various levels of organization that are called systems. Each of these biological systems includes a separate and distinct series of attributes and problems. Air pollution might affect the overall health of a pine forest, but its impact on a solitary animal or plant might be unnoticeable. At the local scale, the entire biological community, as well as certain plant and animal species, are of greatest concern. The study of biological systems at this level is called "ecology".

Ecology is the study of the relationships between plants and animals and their environment. Used in this sense, the term "environment" has a broad meaning: it includes everything that affects plants and animals. This includes purely physical factors, such as light, temperature, rainfall, humidity, and topographic form, as well as biological factors, such as parasites, predators, mates, competitors, and man.

The environment is not uniform throughout either space or time. Environments show great variation, including both cyclic and non-cyclic changes. For example, the erosion of a land surface and the subsequent siltation of a nearby stream is a non-cyclic environmental change.

An organism can inhabit an area if it has proven to be compatible with the local environment. Plants grow in areas where they are capable of exploiting favorable conditions and surviving under stressful conditions. This compatible environment is known as a "habitat".

To understand physical environmental factors, it is of value to observe and analyze vegetative species. Their presence in an area is, in most cases, directly linked to existing physical conditions. Plants are also capable of modifying their physical environment once they have become established. These modifications can be accomplished through shading, moisture retention, and alterations of the chemical makeup of the soil.

More than one species of plant or animal can occupy the same general area. In nature, consequently, organisms exist in definite associations.

Ecological stability refers to the ability of an ecosystem to withstand and/or adapt to alterations in the environment without experiencing significant changes in composition. In natural systems, as well as many man-made

systems, stability is directly related to the diversity of the system under consideration.

Historically, environmental instability occurred in the City and its planning area as the native habitat was disturbed due to the introduction of agriculture and subsequent urbanization. Habitats, characterized by a diversity of vegetation and wildlife, were replaced by a single vegetative species for agricultural production or the asphalt and landscaping of urban types of development. Wildlife species which had used the area relocated to nearby areas of similar vegetation. As agriculture and urbanization spread, these species were scattered further away from their original habitat.

Reduction in a habitat's diversity also was accompanied by a higher susceptibility to pests and fungi; a species' vulnerability is increased when its diversity is reduced. For agricultural crops, this problem was minimized by the application of biocides. However, natural systems rarely receive such application and, as a consequence, are more vulnerable to disease.

Of concern is the maintenance of healthy and diverse vegetative and wildlife habitats in balance with man's continued development of the City and its planning area. Fragmented and sprawling development can incur significant levels of adverse disruption, while a concentrated pattern of development surrounded by large open areas can be more successful in maintaining ecologic diversity. Areas along the foothills of the San Gabriel and Sierra Pelona Mountains are of greatest concern, as they exhibit the greatest diversity of vegetation and wildlife.

Of additional concern is the disruption of vegetative species unique to the Lancaster area, such as the Joshua Tree and the desert wildflower. Development irrespective of their presence could threaten these species to extinction. The Joshua Tree is extremely limited and unique and is often destroyed as urbanization expands. The more extensive wildflowers are increasingly disturbed by the use of off-road vehicles.

3.6.1 <u>Vegetation</u>

Plant communities develop over time, and these communities are characterized by the dominance of one or a few particular species. Each community is classified by the species or group of species which dominate (e.g.,

oak woodland). A community may also be characterized by a particular geographic or physical feature (e.g., desert woodland).

Three classes of vegetative communities are found in the City of Lancaster, including "desert", "desert woodland", and "cultivated and urban". Two additional communities, "chaparral" and "sagebrush", are found in portions of the planning area which extend into the foothills (Figure 12). These communities and their conditions include:

a. Desert (flat areas, particularly northwest areas, of the City and planning area)

1) Desert Buttes - Sparsely vegetated areas located near summit of rocky areas.

Fragility: Very fragile and subject to damage by off-road vehicles.

Rarity: Quite rare, limited to rocky butte areas.

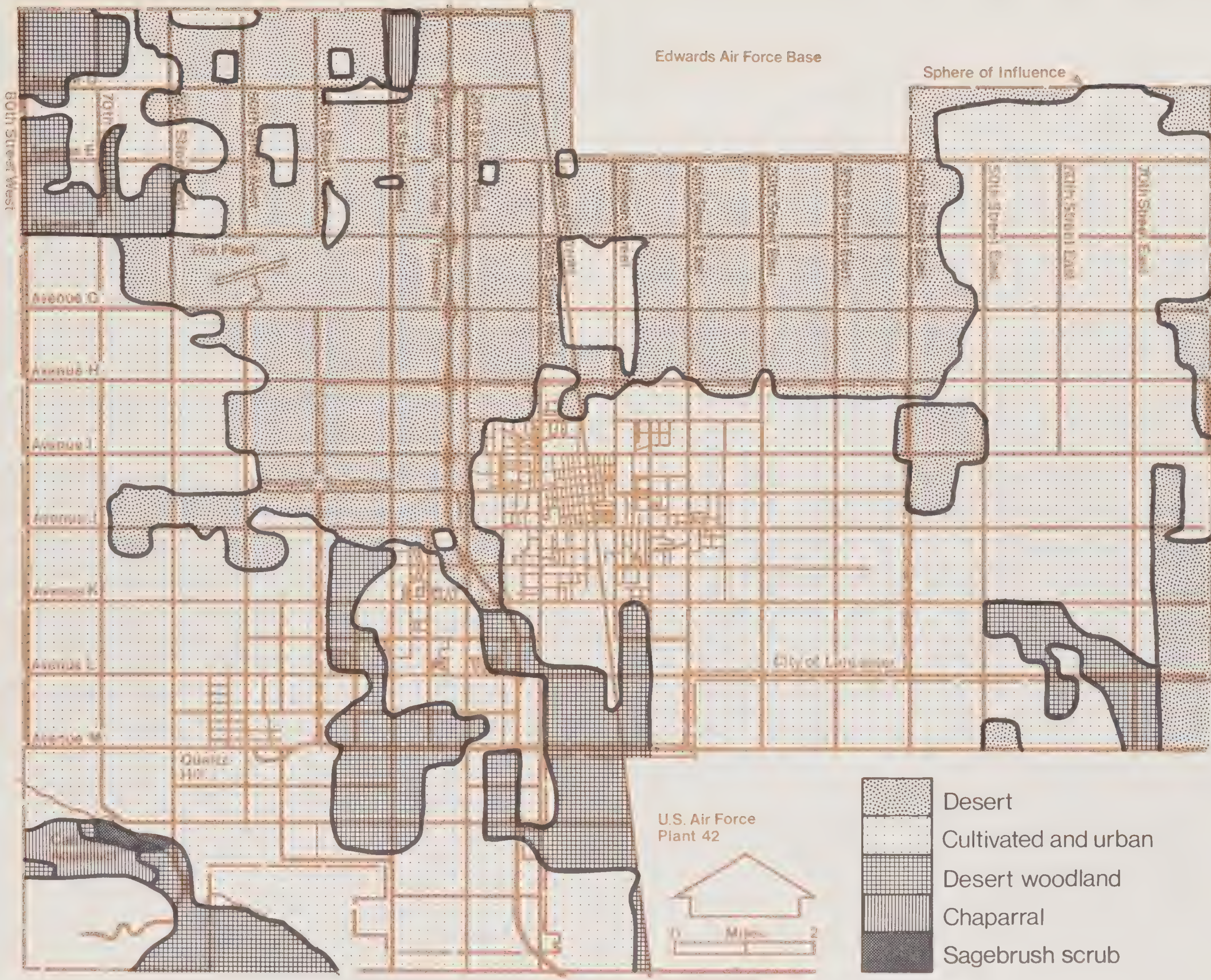
2) Creosote Bush Scrub - Cresote bush *(Larrea tridentata)* dominated association existing on well-drained slopes, fans, and valleys of desert interior.

Fragility: Remote, harsh climate generally not desirable for human habitation, but area is under pressure from developers. Desert floor is easily broken down by vehicular traffic, easily overgrazed by livestock.

Rarity: Most county areas intact. Relatively common in northeast portions of county.

3) Shadscale Scrub - Plant association dominated by *Atriplex confertifolia, Grayia spinosa, Artemisia spinescens*, etc., which flourishes on the hard pan alkaline areas of the Mojave Desert.

Fragility: Susceptible to subdivision. Very susceptible to vehicular traffic. Easily overgrazed by livestock. Rejuvenation of this and other desert habitats requires 25-50 years.



Vegetation
Figure 12

Rarity: Relatively common in north portions of county. Most areas are intact.

4) Alkali Flats - Vegetation found in alkaline areas, such as Rosamond Lake. Vegetative species include Saltbush (*Atriplex spp.)* and succulent chenopods (*Suaeda spp., Salicornia spp.*, etc.).

Fragility: Vulnerable to disruption through foot and vehicular traffic.

Rarity: Restricted to the northeastern portion of the county. Relatively intact to date.

b) <u>Desert Woodland (well-drained mesas and slopes, particularly in south and southwest areas of City)</u>

1) Pinyon-Juniper Woodland - Open forest generally on desert-facing slopes, whose dominant types include: the one-leaf pinyon (*Pinus monophylla)* and the California juniper (*Juniperus californica)*.

Fragility: Subject to subdivision. Understory susceptible to destruction by foot or vehicular traffic. One-leaf piyons are showing smog damage.

Rarity: Few small areas left in county. Rare due to elevational limitations (1963: 138,000 acres in the Antelope Valley). Approaching a critical level because of urbanization (weekend homes and large number of recreational activities throughout the year).

2) Joshua Tree Woodland - Open forest of well-drained slopes and desert mesas dominated by the Joshua Tree (*Yucca brevifolia)*.

Fragility: Subject to subdivision. Easily destroyed by off-road vehicles, fires, tree cutting.

Rarity: Much of the habitat is intact in the Antelope Valley, but rapidly being developed. Near critical level in the City's sphere of influence.

c. Cultivated and Urban

Cultivated - Areas of row crops, orchards, pastureland.

Plantations - A planted area in which trees are cultivated for their own value (tree farms, tree experimental areas) or for wind protection (eucalyptus).

Barren - Areas devoid of vegetation through disruption (extractive mining) or unstability of natural substrate.

Fragility: Not fragile in a natural sense.

Rarity: Common.

d. Chaparral (dry slopes and ridges in southwest area of City's planning area)

Chaparral - Associations of such shrubs as *Ceanothus spp.*, manzanitas (*Arctostaphylos spp.*), scrub oak (*Quercus dumosa)*, and other broad leaf sclerophyll types of vegetation. Ranging from open to nearly impenetrable in character.

Chamise Chaparral - Chaparral association in which chamise (*Adenostoma fasciculatum*) is the dominant species.

Semi-Desert Chaparral - Similar in species composition to chaparral; however, more open distribution.

Fragility: One of the most durable habitats from a vegetational viewpoint. Fire adapted, but subject to severe fire damage due to extreme protection from natural burning. Vulnerable to damage by off-road vehicles and heavy pedestrian use.

Rarity: Rleatively abundant at present.

e. Sagebrush (dry, rocky, gravelly slopes in southwest area of City's planning area)

Sage Scrub - Shrub associations with such dominants as Sagebrush (*Artemisia tridentata*), White Sage (*Salvia apiana*), and Buckwheat (*Erogonium spp.*), and rabbit brush (*Chrysothamnus spp.*).

Fragility: Subject mostly to subdivision. Fire adapted. Vulnerable to heavy traffic -- pedestrian or other. Vehicular traffic particularly destructive. Reasonable susceptible.

Rarity: Small areas of the foothills.

The two principal environmental characteristics which have influenced the vegetative communities to the greatest extent are moisture availability and fire. Plants which are resistant to the desert's dry conditions are found in the area. Chaparral, sagebrush, and desert communities have adapted to the prolonged dry periods that are characteristic of the region's climate.

Many plant communities have adapted to fire, and they now depend on this influence to maintain their health and vigor. For example, certain chaparral species have developed resprouting capabilities that allow them to revegetate quickly after a fire. If periodic fire is suppressed, plant material will accumulate, creating the potential for extremely damaging fires. Growth in fire-adapted plant communities also suffers when accumulating debris reach a depth that prevents younger plant establishment.

3.6.2 Wildlife

An analysis of the abundance and distribution of wildlife is, in essence, a study of habitat. As an ecological term, "habitat" is defined as the physical place where an organism resides. Animals that exist in a given habitat have become adapted to the food, protective cover, and nesting areas furnished by that particular place. Since many of these resources are furnished by plant species, many relationships and dependencies exist between plants and animals.

Since a wide diversity of habitats are available in the City and its planning area, the area has been colonized by a wide array of resident and migratory species (Figure 13). A variety of species are listed below in association with their preferred habitat. The relative abundance of these species is designated by the letters "A" (abundant), "C" (common), and "U" (uncommon).

Wildlife

Figure 13

a. Grassland/Disturbed

Mourning dove (C)	*Zenaida macroura*
Starling (C)	*Sturnus vulgaris*
Barn owl (U)	*Tyto alba*
Rock dove (A)	*Columba livia*
Barn swallow (C)	*Hirundo rustica*
Pheasant (U)	*Phasianus colchicus*
Brewer's blackbird (A)	*Euphagus cyanocephalus*
Red-tailed hawk (C)	*Buteo jamaicensis*
White-tailed kite (U)	*Elanus leucurus*
House sparrow (A)	*Passer domesticus*
Western meadowlark (C)	*Sturnella neglecta*
Mockingbird (A)	*Mimus polyglottos*
California ground squirrel (A)	*Otospermophillus beecheyi*
Feral cat (A)	*Felis domesticus*
Feral dog (A)	*Canis domesticus*
Norway rat (C)	*Rattus norvegicus*
Deer mice (A)	*Peromyscus spp.*

b. Desert

Zebra-tailed lizard (C)	*Callisaurus draconoides*
Desert tortoise (U)	*Gopherus agassizi*
Collared lizard (U)	*Crotaphytus collaris*
Side-blotched lizard	*Uta stansburiana*
Desert horned lizard (U)	*Phrynosoma platyrhinos*
Mojave fringe-toed lizard (U)	*Uma scoparia*
Rattlesnake (several species) (C)	*Crotalus spp.*
Desert iguana (U)	*Dipsosaurus dorsalis*
Long-nosed leopard lizard (U)	*Crotaphytus wislizenii*
Common raven (U)	*Corvus corax*
Phainopepola (U)	*Phainopepla nitens*
Pacific kangaroo rat (A)	*Dipodomys agilis*
Antelope ground squirrel (C)	*Ammospermophilus leucurus*
Desert woodrat (C)	*Neotoma lepida*

c. Desert Woodland

Collared woodland (U)	*Crotaphytus collaris*
Scott's oriole (U)	*Icterus parisorum*
Cooper's hawk (U)	*Accipiter cooperii*
Mourning dove (C)	*Zenaida macroura*
Pinyon jay (C)	*Gymnorhinus cyanocephala*
Ash-throated cactus wren (C)	*Camphylorhynchus brunnei-capillus*

Flycatcher (C)	*Myiarchus cinerascens*
Cedar waxwing (C)	*Bombycilla cedrorum*
Gambel's quail (C)	*Lophortyx gambelii*
Red-tailed hawk (C)	*Buteo jamaicensis*
American kestrel (C)	*Falco sparverius*
White-headed woodpecker (U)	*Picoides albolarvatus*
Loggerhead shrike (U)	*Lanius ludovicianus*
Townsend solitaire (U)	*Myadestes townsendi*
Desert woodrat (C)	*Neotoma lepida*

d. <u>Chaparral</u>

Western fence lizard (A)	*Sceloporus occidentialis*
Gopher snake (C)	*Pituophis melanoleucus*
California kingsnake (C)	*Lampropeltis getulus*
Mojave rattlesnake (U)	*Crotalus scutulatus*
California thrasher (C)	*Toxostoma redivivum*
California quail (A)	*Lophortyx californicus*
Black-chinned sparrow (A)	*Spizella atrogularis*
Brown towhee (A)	*Pipilo fuscus*
Dusty poorwill (U)	*Phalaenoptilus nuttallii*
American robin (C)	*Turdus migratorus*
Common flicker (U)	*Colaptes auratus*
Lesser goldfinch (C)	*Carduelis psaltria*
Wrentit (A)	*Chamaea fasciata*
Bewick's wren (C)	*Thryomanes bewickii*
Racoon (C)	*Procyon lotor*
California striped skunk (C)	*Mephitis mephitis*
California pocked mouse (A)	*Perognathus californicus*
California ground squirrel (A)	*Otospermophilus beecheyi*
Badger (U)	*Taxidea taxus*
California grey fox (U)	*Urocyon cinereoargenteus*
Coyote (C)	*Canis latrans*
Bobcat (U)	*Lynx rufus*
Mule deer (U)	*Odocoileus hemionus*

d. <u>Sagebrush Scrub</u>

Sagebrush lizard (A)	*Sceloporus graciosus*
Speckled rattlesnake (U)	*Crotalus mitchelli*
Western whiptail (C)	*Cnemidophorus tigris*
Western toad (U)	*Bufo boreas*
Turkey vulture (C)	*Cathartes aura*
Gambel's quail (C)	*Lophortyx gambelii*
Loggerhead shrike (U)	*Lanius ludovicianus*
American kestrel (U)	*Falco sparverius*

Roadrunner (U)	*Geococcyx californianus*
California quail (A)	*Lophortyx californicus*
Sage thrasher (C)	*Oreoscoptes montanus*
Red-tailed hawk (C)	*Buteo jamaicensis*
Brewer's sparrow (C)	*Spizella breweri*
Rufous-sided towhee	*Pipilo erythrophthalmus*
Wrentit (C)	*Chamaea fasciata*
Sage sparrow (U)	*Amphispiza belli*
Costa's hummingbird (U)	*Calypte costae*
California ground squirrel (A)	*Otospermophillus beecheyi*
Audubon's cottontail (C)	*Sylvilagus audubonii*
Little pocket mouse (C)	*Perognathus longimembris*
Western harvest mouse (C)	*Reithrodontomys megalotis*
Coyote (C)	*Canis latrans*
Ashy brush rabbit (C)	*Sylvilagus bachmani*

3.6.3 Rare and Endangered Species

Within the City of Lancaster and its planning area are a number of vertebrate species whose continued existence is threatened with potential extinction. These are classified as "protected", "rare", and/or "endangered" by the California Department of Fish and Game, and are protected from capture or sale.

In inventory of threatened species, the following criteria were utilized:

To warrant an endangered designation (E) one of the following conditions must exist:

1. The mortality rate consistently exceeds the birth rate.

2. The species is incapable of adapting to environmental change.

3. The habitat is threatened by destruction or serious disturbance.

4. Survival is threatened by the unwanted introduction of other species through predation, competition or disease.

5. Survival is threatened by environmental pollution.

A species is considered rare (R) if any of these following conditions exist:

1. Species is confined to a relatively small and specialized habitat and is incapable of adapting to different environmental conditions.

2. Species is nowhere abundant.

3. Species is so limited that any appreciable reduction in range, numbers, or habitat would cause it to become endangered.

4. Species would become endangered if any current management and protection program were diminished in any degree.

A third group of organisms is depleted in numbers and in need of protection. These animals have been given protection under State law that prohibits their taking for other than strictly controlled scientific or educational purposes. Such organisms are signified in this inventory by the letter "P".

Using the preceding criteria, seven threatened vertebrate species are found in the City and its planning area. These have been classified according to their habitat and are depicted on Figure 14. These species include:

<u>Desert Reptile Assemblage (Habitat 50-51)</u>

Desert tortoise (R)	*Gopherus agasizzi*
Collared lizard (P)	*Crotaphytus collaris*
Desert horned lizard (P)	*Phrynosoma platyrhinos*
Desert iguana (P)	*Dipsosarus dorsalis*
Long-nosed leopard lizard (P)	*Crotaphytus wislizenii wislizenii*

<u>Prairie Falcon Assemblage (Habitat 60-63)</u>

Prairie falcon (R)	*Falco mexicanus*
Collared lizard (P)	*Crotaphytus collaris*
California condor (E)	*Gymnogyps californianus*

Another group of animals that are threatened are the reptile species found in the dry wash areas and desert locales. Those species that inhabit the washes are being threatened by flood control improvements and other stream modifications, which displace the rocky habitats

Threatened Vertebrate and Sensitive Vegetative Species

Figure 14

needed by these animals. The reptile assemblage found in the desert portions of the City and its planning area are also threatened by land use changes and subsequent habitat removal, as well as the disruptive impacts generated by the use of off-road vehicles.

The impact of these species in the Lancaster area is limited. The California Condor, which is the most significant of the species, does not nest in the area. It has been sighted flying over and feeding in the foothills. As these areas are relatively free from development, no significant effects are anticipated. The habitat of the other rare and endangered species is extensive, covering much of the greater Antelope Valley and Mojave Desert. Expansion of currently urbanized areas on their periphery will not likely threaten this habitat.

Further, two plant species in the City have been identified by the California Native Plant Society (CNPS) as sensitive. These have been incorporated into the Smithsonian Institute's list of candidate rare and endangered species (1974), as authorized by the Federal Endangered Species Act of 1973. Table 4.2 lists those plants which do or may occur in the City, along with the Society's endangerment code, local habitat, and Smithsonian's endangerment code.

3.6.4 Surface Water and Fisheries

Only two bodies of surface water are found in the planning area: Lake Lancaster and Apollo Lake. Both are man-made, relatively small, and do not provide a continual habitat for fish. Apollo Lake is stocked periodically by the County of Los Angeles for recreational purposes of the area's residents. The lake is planted with trout and occasionally bass and catfish. Otherwise, the intermittent streams which cross the area are dry for most of the year and do not provide a suitable habitat for fish.

TABLE 4.2

SENSITIVE PLANTS THAT OCCUR IN THE CITY OF LANCASTER

Scientific Name	Common Name	CNPS REUD codes[1]	Smithsonian code[2]	Habitat in City
Calochortus striatus	Alkalai mariposa	2-1-1-3	T	Alkaline meadows and springy places; found west of 10th St. E. between Avenues I and H and Avenues L and M
Chorizanthe spinosa	Mojave spineflower	2-2-2-3	E	Dry, sandy and gravelly places; found east of 10th St. E. between Avenues I and H

[1]Status, as defined by the California Native Plant Society (Powell, 1974):

First Number: Rarety

1 - Rare, of limited distribution, but distributed widely enough that potential for extinction or extirpation is apparently low at present.

2 - Occurrence confined to several populations or one extended population.

3 - Occurs in such small numbers that it is seldom reported; or occurs in one or very few highly restricted populations.

P.E. - Possibly extinct or extirpated.

Second Number: Endangerment

1 - Not endangered.

2 - Endangered in part.

3 - Totally endangered.

Third Number: Vigor

1 - Stable or increasing.

2 - Declining.

3 - Approaching extinction or extirpation.

(continued)

TABLE 4.2 (continued)

Fourth Number: General Distribution

1 - Not rare outside California.

2 - Rare outside California.

3 - Endemic to California.

[2]Status, as defined by the Smithsonian Institute (1974):

E - Endangered; those species of plants in danger of extinction throughout all or a significant portion of their national ranges.

T - Threatened; those species of plants likely to become endangered within the foreseeable future throughout all or a significant portion of their national ranges.

References:

Powell, W.R., 1974. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1. California Native Plant Society.

Smithsonian Institute, 1974. Report on Endangered and Threatened Plant Species of the United States. House Miscellaneous Documents, Vol. 1-1. 94th Congress, 1st session, 15 December 1974.

U.S. Fish and Wildlife Service, 1976. Endangered and Threatened Wildlife and Plants - Republication of the List of Species. Federal Register, 27 October 1976. Supplements to list published in Federal Register 11 August 1977, 24 April 1978, 28 September 1978.

3.7 Cultural, Historic, and Aesthetic Resources

3.7.1 Scenic Highways

Since one must travel from point to point within a region, the opportunity exists to create circulation corridors which capitalize on the scenic resources. A scenic highway presents opportunities for residents and visitors to experience a variety of visual environments from their automobile or tour bus. In the planning area, the view from the road is characterized by a variety of sights, including panoramic vistas of rugged mountains, steep canyon slopes covered with native chaparral and sage, extensive areas of the Mojave Desert, and rural or small-town settings.

In most areas, limited development has not significantly reduced scenic potential; thus, there is an opportunity for public investment to insure the future maintenance of this visual resource. A scenic highway must have a corridor of scenery with character and attractiveness, and it must also be appropriate for reasonable land use controls and policies. Although no one set of criteria adequately defines character and attractiveness, the following considerations may be utilized:

a. Visibility - The driver should be able to experience scenery without having to stop or significantly change the necessary angle and duration of vision required for safe driving.

b. Landforms - This includes the physical characteristics of the natural corridor, such as gently rolling hills or rugged cliffs, streams, geologic formations, and distant ridges.

c. Vegetation - This includes the type of vegetation within view, such as row crops, orchards, chaparral, desert or woodlands.

d. Structures - Buildings may be included in scenic corridors and may add to the scenic quality.

e. Panoramas - Scenic overlooks with panoramic views of urban, rural, or natural areas should be included when available.

The opportunity for design and management of these corridor landscapes must be siezed upon whenever possible, not only to enhance the quality of the recreation

experience, but also to provide the kind of "open space system" that organizes and communicates the coherence and identity of a region.

Though there are no designated scenic highways in the planning area, the following highways exhibit all or some of the above characteristics which make them suitable for such consideration.

- Avenue E - Lancaster Road
- Godde Hill Road - 60th Street West
- Avenue M - West from the Antelope Valley Freeway to Quartz Hill
- Avenue L - East of the Antelope Valley Freeway
- Sierra Highway

3.7.2 Archaeological and Historic Sites

a. Archaeological Sites

In discussing present utilization of the natural environment, it should not be forgotten that past populations of different cultures and technology have also lived in the area. Many archaeological sites have been discovered in the City's vicinity. These finds indicate the region was extensively settled by early Indian tribes. Sites that have been discovered reflect the area's natural history and aid in an understanding of the first inhabitants (Figure 15).

Most archaeological finds are located in areas where four of the basic necessities of life were supplied. These necessities include: water, food, wood, and necessary minerals. Surveillance was also important; thus, many of the sites were located on or near hills and other high points. Key archaeological areas include locations along Amargosa and Anaverde Creeks and the ridges at the south and west of the City's planning area.

Good hunting in the area, and the location of the Antelope Valley between the cultures of the coastal and inland peoples, made it important as an area of extensive trade and migration. As trails literally crisscrossed the valley, potentially important archaeological sites were scattered throughout the area, and not confined exclusively to streamside and ridgetop.

Archaeological-Historical Sites

Figure 15

Known archaeological sites have been differentiated according to their significance. Sites which were burial places or residences are considered most significant because of the religious connotations afforded burial grounds and the intensive activities associated with the village. Areas of lesser cultural significance include refuse and disposal sites and cooking sites, known as "middens".

Archaeological sites are extremely fragile environmental resources, and they are threatened by exposure to damage, not only from vandals, but also from curious sightseers. Archaeological sites are presently protected by antiquities laws, but these are ineffective because of the dispersion of the sites. A desirable policy is not necessarily a "hands-off" policy of protection, but one that allows the opportunity for thorough investigation of a site before disruption. The artifacts and resultant knowledge a site yields is of greater significance than the preservation of the actual site itself.

Although the professional archaeologists may inventory and analyze the importance of a known site, the absence of an acceptable research framework has not allowed full evaluation of this resource. In addition, archaeologists are uncertain about the nature and scope of artifacts and sites not yet discovered. Remains in the City's planning area are expected to be a valuable guide to the further understanding of the inland cultures of California.

b. Historical Sites

Historical sites are evidence of relatively recent events in the City and its planning area. They relate to such events as the founding of agricultural colonies and creation of rest stations along the stagecoach route. These resources are irreplaceable landmarks and have been recognized by federal, state and local government, as well as private groups. In the City of Lancaster, the Western Hotel has been identified and is registered as a historical landmark by the California Historical Landmarks Advisory Committee and the Director of Parks and Recreation. Erected by the Gilwyn family in 1884, this building was purchased in 1902 by George T. Webber, who operated it as the Western

Hotel. The Lancaster Chamber of Commerce was organized in its dining room. Between 1905 and 1913, construction crews of the Los Angeles-Owens River Aqueduct were housed in this hotel, and it became a center of commercial and social activity in the early life of the community.

3.7.3 Outdoor Recreation

Recreational opportunities are provided to a city's residents by both public and private sectors. The former provides a system of neighborhood, community, and, when appropriate, regional parks, bike paths, bridle trails, and golf courses. A wide variety of commercially oriented recreational activities are provided by the private secotr, including private golf courses, health clubs, movie theaters, and amusement specialties, such as waterslide and skateboard parks. The four principal elements of the public outdoor recreation system and their standards are defined as follows:

a. Neighborhood Parks

Function - Neighborhood parks are generally designed to serve a population of from 2,000 to 6,000 persons living within one-quarter to one-half mile from the park. Neighborhood parks are normally designed for the more passive types of recreation and for those activities which require very little supervision.

Size - While a minimum of 15 acres is recommended, neighborhood parks may range in size from five to 20 acres.

Location and Access - Neighborhood parks are usually located in residential areas. The type of facilities associated with these small, passive-use parks will not generate a high volume of traffic.

b. Community Parks

Function - Community parks are generally built to serve a population of between 8,000 and 20,000 people living within one-half to three miles of the park. Such parks are usually designed to accommodate active use and heavy recreational programming. Most users of community parks are willing to drive some distance to take advantage of the facilities and programs offered at these sites.

Size - While community parks may range in size from 20 to 50 acres, a minimum of 30 acres is recommended.

Location and Access - The best location for community parks is on major or secondary arterial access roads, rather than on smaller streets in residential areas. In order to avoid creating traffic problems, community parks are usually designed for easy accessibility to users arriving by automobile; on-site parking is often included.

c. Regional Parks

Function - A regional park serves a population living within a large geographic area between one-half and one hour's driving distance away. Regional parks often have unique facilities to attract users, and sometimes combine the active functions of a community park with large passive-use areas.

Size - The typical regional park can range from approximately 80 acres to as much as 1,000 acres; much of the park is left open and can be landscaped or allowed to remain in a natural state.

Location and Access - Regional parks are located wherever large enough tracts of land are available, often with natural geographic features playing an important part in the final choice of a site. Whether located in urban areas or in rural settings, regional parks are normally designed for ease of access by automobile, with abundant on-site parking to accommodate large crowds.

d. Bikepaths

Function - Ideally, designated bikepaths form a system of links tying together some of the major trip generators within an urbanized area -- schools, parks, shopping centers, and residential areas -- thereby encouraging use of the bicycle as an alternative to the automobile for short local trips.

Size - A one-lane bicycle path should be no less than five feet in width, while the minimum safe width for a two-lane bicycle path is ten feet.

Location - Bikepaths are designated in two general types of locations -- on the same roadway used by

cars and separated from motorized traffic only by a painted stripe or a row of reflectors; and physically separate from the roadway used by cars. This latter type of bikepath can parallel the roadway and be separated from it by a raised median strip, much like a sidewalk is separated from the roadway it parallels; or can follow a route that bears no relationship to the roadway, as for example along utility line easements, flood control channels, or river banks.

Some of the factors involved in choosing which type of bikepath would best serve Lancaster's needs are volume and speed of motor vehicles in the curbside lane, projected volume of bicycle traffic, available space, and the likelihood of increased safety and efficiency for either type of vehicle if the path were built.

Currently, there are four developed or partially developed park sites in the City. These include:

a. Jane Reynolds Park
b. Mariposa Park
c. El Dorado Park
d. Rawley-Duntley Park

Of these, Jane Reynolds is the most extensively developed, with baseball diamonds, basketball court, volleyball court, football field, swimming pool, barbecues, picnic shelters, and community building. Though smaller than the 30 acres recommended, Jane Reynolds functions as the principal community park for the City.

In addition, the City owns two major sites slated for development as parks. Currently under development for community park uses is a 53 acre site adjacent to the Antelope Valley Freeway at Avenue K-8. Baseball fields, basketball courts, passive picnic areas, barbeques, a community building, and other similar facilities are programmed for this site. To the east of the City, at 30th Street East and Lancaster Boulevard, is the undeveloped 20-acre Tierra Bonita Park.

Supplementing these resources are the playgrounds and open spaces of the 12 elementary and one high school and Antelope Valley College. Though all are not currently available, these represent a potential resource for joint use by students and nearby residents.

Cumulatively, in 1979, the City contains 166 acres of developed, undeveloped, and joint-use recreational land. Based on the National Recreation Association standard of five acres of recreation for each 1,000 residents, the City is currently deficient by 159 acres.[1]

Commercial recreation facilities located within or in proximity to the City include a miniature golf course, walk-in and drive-in movie theaters, bowling alleys, skateboard parks, handball/recquetball facilities, pool/billiards facilities, electric game arcade, ice skating rink, roller skating rink, and golf courses. Additionally, the Antelope Valley Family YMCA provides a health club and other recreational facilities.

Figure 16 illustrates the distribution of recreational facilities serving the City. A list of the specific recreational facilities at each public and commercial site is included in Appendix B.

Bikepaths are currently developed along the following highways:

a. Avenue L between 40th and 30th Streets East.
b. 30th Street between Avenues L and K.
c. Avenue K between 30th Street West and Division Street.
d. Division Street between Avenue K and Lancaster Boulevard.
e. Avenue J between Division Street and 10th Street East.
f. 20th Street West between Avenues K and I.
g. Avenue I between 20th Street West and 5th Street East.
h. 5th Street East between Avenues I and J.

A survey of Lancaster residents was conducted by Saito/Sullivan Associates to assess their perception of parks and recreation problems and needs. The following summarizes the pertinent conclusions of the 289 residents surveyed. (The complete questionaire is contained in Appendix C.)

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[1]Estimate by Saito/Sullivan Associates, Inc.

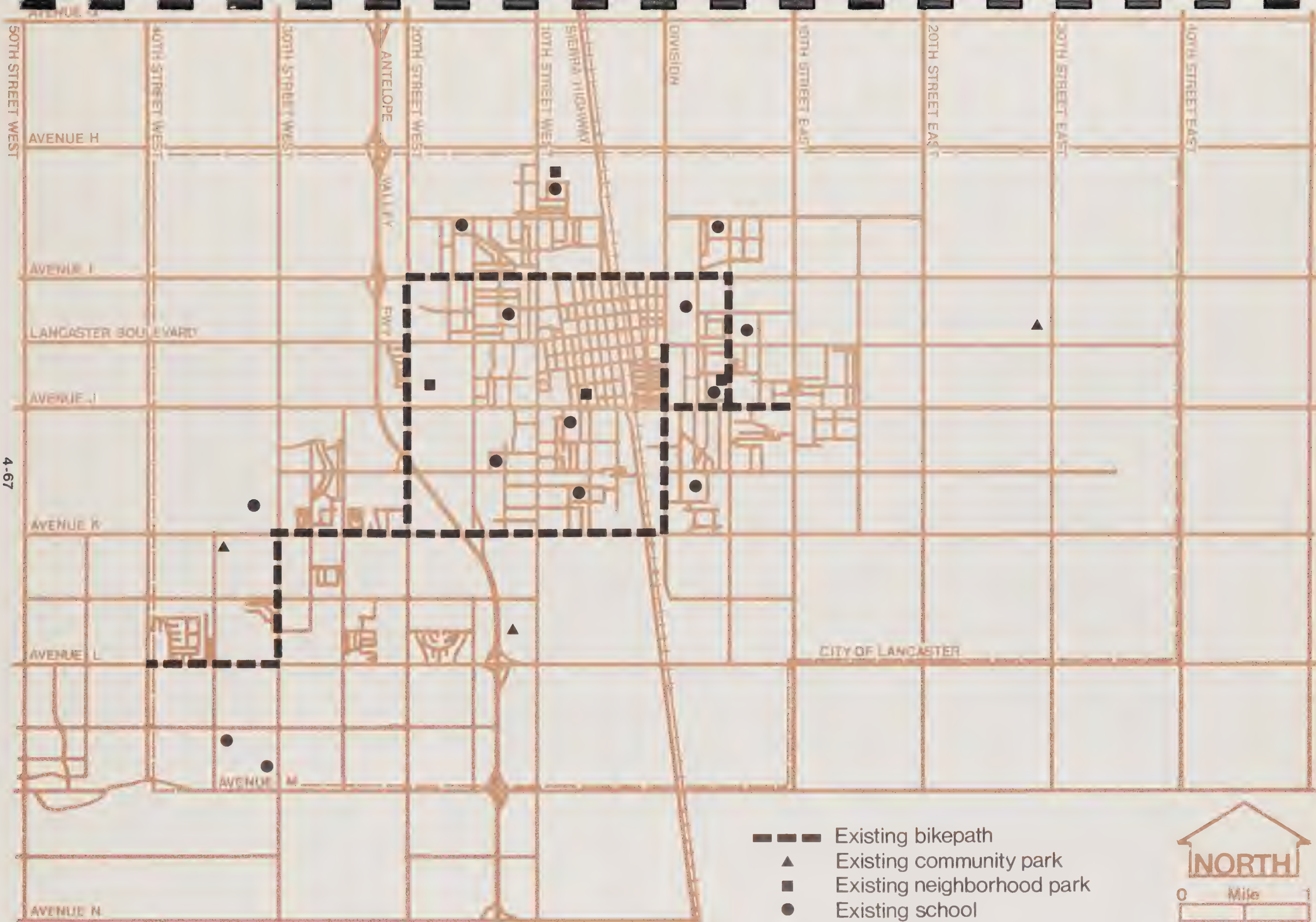


Figure 16

Existing Recreational Resources

a. Well over three-fourths of all persons taking the survey use some City park at some time.

b. Over two-thirds of those who frequent a City park use Jane Reynolds Park; almost one-half (43%) use El Dorado Park.

c. Almost one-half of the randomly chosen respondents to the questionnaire live closer to Jane Reynolds Park than to any other City park.

d. The single largest age group using any City park is adults; next largest is elementary-age children.

e. Over half of those who frequent a City park do so from 0 to four times per month.

f. Over half of all respondents feel the currently existing amount of City park acreage and park facilities is inadequate.

g. An overwhelming majority of all respondents is in favor of the development by the City of new parks.

h. Well over three-fourths of all respondents feel there is a need for more commercial recreation in the City.

i. The one new commercial recreational facility most in demand is a community theater; second most in demand is an exercise studio/gymnasium; tying for commercial recreational facility third most in demand are a skating rink, horseback riding facility, and a miniature golf course.

j. Over two-thirds feel school grounds should be used as public parks during non-use hours.

k. Well over three-fourths are in favor of the City's requiring residential developers to dedicate open space and parks in new housing developments.

l. The recreational facility most needed in the City park which is nearest respondents' own homes is a teen center; next most needed facility close to respondents' homes is a multipurpose recreation center.

m. The community sports facility considered to be most needed in the City of Lancaster as a whole is a swimming pool; next most needed facility, city-wide, is a public gymnasium.

n. Over half of those using a City park go by car to their destination; next most popular modes of transportation are walking and bicycling.

o. Over one-third of those responding feel the City should build a few large community parks or many smaller neighborhood parks. Less than one-fifth favor the development of only one or two large regional parks.

Population growth of the City will yield a demand for 329 to 738 total acres for neighborhood and community parks by the year 2000. Table 4.3 lists the projected demand associated with each population forecast.

It should be noted that park and recreation demand can be met by several methods. Traditionally, neighborhood and community parks are carved out of residential communities and developed with athletic equipment and fields, swimming pools, picnic areas, barbeque pits, community buildings, and other similar facilities. Additionally, school playgrounds can be employed on a joint-use basis. Flood control channels can be used for hiking, equestrian activities, picnic and barbeque facilities, and other activities which do not require installation of permanent or flood-obstructing structures. In roadway and subdivision development, pedestrian and biking trails can be established. Each of these and related commercial developments represent a potential recreational resource to the City.

TABLE 4.3

CITY OF LANCASTER
ESTIMATED PARK AND RECREATION DEMAND

Population Series	*Population*	*Neighborhood Park*		*Community Park*	
		*Acres/1000**	*Acres*	*Acres/1000**	*Acres*
E-O w/o PMD	73,132	2	146	2.5	183
E-O w/PMD	105,712	2	211	2.5	264
D-150 w/o PMD	131,538	2	263	2.5	329
D-150 w/PMD	164,118	2	328	2.5	410

*Source: Saito-Sullivan Associates, Inc.

3.8 Energy Resources

All traditional energy resources consumed by the residents of the City and its planning area are imported. There are no deposits of oil, natural gas, and coal, refineries and processing facilities, or generating stations. Natural gas is imported by the Southern California Gas Company from its interstate system. Electrical energy is accessed by transmission and distribution lines from its network of generating stations outside the City.

As has been clearly demonstrated in recent years, these traditional sources of energy are extremely limited, and have been wastefully consumed. Sprawling urban development which necessitates extensive automotive travel consumes vast quantities of oil and gasoline. Structures with large areas of exposed glass require extensive air conditioning in the summer and heating in the winter.

It is evident that man's continued and future activities are dependent on conservation of existing and development of new resources. Urban patterns which reduce the reliance upon the automobile and total vehicle miles traveled and structure designs which reduce heat gain and loss are essential as conservation techniques. Exploitation of new or under-utilized resources should be pursued. Lancaster's climate, with its numerous clear and hot days, makes it particularly suitable for solar access for heating and, when technologically and economically feasible, electrical generation. High velocity winds downslope from the foothills also offer an opportunity for the development of windmill generation systems.

4.0 Environmental Resources Management Plan

The Environmental Resources Management Plan has been established to resolve the issues defined in the preceding section. It consists of (1) goals, (2) objectives, (3) policies, (4) management strategies, and (5) programs, which have been defined to mitigate or avoid the effects of hazards or constraints and capitalize upon resource opportunities.

4.1 Goals

It shall be the goal of the City of Lancaster to conserve and enhance its natural resources, facilitating development in a manner which reflects the characteristics, sensitivities, and constraints of these systems.

4.2 Objectives

It shall be the objective of the City of Lancaster to:

1) Enhance, rehabilitate, and/or protect significant natural resources, including fragile ecological areas, unique natural features, and culturally significant sites.

2) Promote the wise development and conservation of managed renewable and non-renewable natural resources.

3) Minimize the hazards to public health, safety, and welfare that result from natural and man-made phenomena.

4) Provide adequate and accessible outdoor recreation for the needs of the population.

4.3 Policies

It shall be the policy of the City of Lancaster to:

4.3.1 <u>Issue One: Conservation and Protection of Natural Resources</u>

1. Encourage the retention of Joshua Trees and California Juniper as feasible and economically practical in residential, commercial, industrial and public developments.

2. Encourage the utilization of native vegetative species in landscape design of residential, commercial, industrial and public development.

3. Encourage the undertaking of a regional reconnaissance of archaeological resources within the Antelope Valley.

4. Require an archaeological surface reconnaissance and impact assessment by a qualified archaeologist for any significant development on, or adjacent to, known archaeological sites.

5. Require that adverse impacts be mitigated where a development would adversely affect a known significant archaeological site. Adequacy of the proposed mitigation measures shall be determined by the City of Lancaster in accordance with standards to be established by the City.

6. Evaluate the potential effects on local groundwater quality of all governmental and private actions related to any liquid and solid waste disposal and require that adverse effects be mitigated.

7. Encourage water conservation activities in residential, commercial, industrial, public, and other development.

8. Require developers to minimize disturbance of the natural ground cover on a site until such activity is required.

9. Require developers to observe dust abatement procedures during construction.

10. Restrict the use of off-road vehicles to designated areas to minimize the erosion of soils.

11. Pursue a program for the installation of vegetation along major thoroughfares.

12. Establish a system of open spaces (e.g., linear corridors, parks) to enhance the physical and visual character of the City and protect and preserve the ecological balance of wildlife and plant communities.

13. Consolidate urban development in well-defined centers to reduce disruption of native plant and animal habitat.

4.3.2 Issue Two: Managed Resource Production

1. Encourage the preservation of prime agricultural lands within the City's planning area, particularly those within the defined "agricultural opportunity areas". These consist of areas either currently devoted to agricultural use or those which retain a high degree of suitability for such use. ("Agricultural opportunity areas" are not synonomous with "agricultural preserves" as defined by the California Land Conservation Act.)

2. Encourage and support efforts by federal, state and local agencies to establish a means to improve the economic viability of agricultural production in the areas of prime soils located outside of existing urban areas.

3. Encourage the establishment and maintenance, wherever feasible and appropriate, of aquifer recharge zones and processes to assure water quality and quantity. Develop a regional aquifer recharge strategy in cooperation with other local, state and federal agencies.

4. Protect significant mineral resources by a long range approach toward mineral resource utilization.

5. Encourage the use of solar and wind energy systems in public and private buildings. Building codes should be revised as required to accommodate such systems.

6. Develop standards to provide sufficient solar exposure for developments to effectively utilize solar energy systems.

7. Provide ordinances for the implementation of energy saving designs and systems and innovations in building construction.

8. Encourage dispersal of public services within areas in close proximity to population concentrations to reduce travel and energy consumption.

4.3.3 Issue Three: Protection from Hazardous Systems

1. Protect the public from exposure to flood hazards by prohibiting residential, commercial and industrial development in designated flood inundation areas unless proper mitigation is instituted.

2. Plan, develop, and maintain flood control channels in cooperation with other jurisdictional agencies.

3. Encourage the multiple use of flood inundation areas for recreation, agricultural, scenic relief, groundwater recharge, mineral extraction and wildlife protection.

4.3.4 Issue Four: Provision of Recreation Opportunities

1. Encourage continued cooperation among federal, state, and local agencies in multiple use management of public lands specifically recognizing recreation as a desirable use.

2. Encourage the development of quality commercial recreational facilities on privately-held and City-owned land under long-term lease or concession agreements. Such agreements allow the City to provide a wider range of facilities that it could on its own, without heavy financial risk. Examples of such facilities might include roller skating rinks, golf course and driving range, skateboarding parks, etc.

3. Provide park land to its residents at the rate of five acres per 1,000 population. School playgrounds may be considered to provide a portion -- perhaps 1.5 acres -- of this total.

4. Provide on-site parking at all park sites at the rate of approximately 12 spaces per acre of active recreational space and six spaces per acre of passive recreational space.

5. Acquire flood control easements and landscape these as linear parks with jogging, bicycling, and equestrian trails along their length. Concrete culverts or boxes shall be discouraged.

6. Acquire and develop future parks immediately adjacent to school sites, when possible, to facilitate joint programming of recreational activities and park maintenance.

7. Coordinate and share the acquisition, development, use, and maintenance of all City parks with other private and governmental entities, where feasible, to assure the most economic coverage of recreational needs. Possible joint-powers agreements could be reached between the City of Lancaster and:

- the local school districts
- adjacent cities
- the County of Los Angeles
- Antelope Valley College
- the Antelope Valley fairgrounds
- Caltrans
- utility companies
- flood control district

8. Locate high cost recreational facilities, such as lighted tennis courts and baseball diamonds, swimming pools, teen or community centers, and cultural arts facilities at large parksites to make the most efficient use of its park acquisition, development, and maintenance dollar.

9. Develop new bicycle trails along major thoroughfares. Bicycle trails shall be clearly identified by signs, painted stripes and, if possible, a landscaped barrier to separate them from automobile traffic. The bikeway system shall be linked to City schools and parks wherever possible.

10. Require the dedication of recreational land, a fee in lieu, or a combination of both of developers of new residential subdivisions and planned unit developments. Revenue derived from these fees shall be used for park acquisition and development within the general area of the particular development they were collected from, as called for by the Quimby Act.

11. Require that park land dedicated to the City by developers of residential property meet minimal development standards as established by Ordinance.

12. Require that developers of industrial and commercial property adhere to a specific set of requirements for property-line setbacks, landscaping of their own property and of median islands, and underground utilities. The goal of such requirements shall be to locate parking facilities and utility lines out of view of passersby and to separate buildings from the street by a landscaped setback. These developers shall be encouraged to set up an assessment district for the landscape maintenance of common areas.

13. Annex Lake Lancaster in preparation for its development by the City as a major regional park and recreation facility.

14. Encourage that recreational programs offered by the City become economically self-sustaining through user fees, registration fees, the sale of promotional items by team members, etc.

15. Evaluate the appropriateness of reducing the costs of City-supported park maintenance services through the formation of park assessment districts in which residents of neighborhoods surrounding each city park pay a fee to help cover the cost of maintenance.

16. Encourage the establishment of a non-profit foundation for the support of recreation, parks, and cultural arts so that donations and gifts from the community can be accepted and disbursed.

17. Encourage the beautification of entry points to the City and development of attractive parks, signs, rest stops and landscaped rights-of-way within clear view of passing motorists to differentiate the City from the surrounding countryside.

18. Develop and maintain attractively landscaped medians along major thoroughfares such as Lancaster Boulevard, Avenues J and K, 10th Street East, and 20th Street East, and other appropriate areas.

19. Exercise control over the size, appearance, location, and quantity of commercial signs along major thoroughfares. Such controls, together with the landscaping of the medians and parkways along these streets, will help to organize and beautify the City's appearance.

20. Consider the use of "transfer of development rights" to provide open space.

4.4 Management Strategies

In addition to the application of the preceding policies, four specific management strategies are recommended: (1) land use controls in significant vegetative communities; (2) land use controls in floodprone areas; (3) land use controls in hillside areas exceeding a 15 percent slope; and (4) development of parks and recreation facilities. Areas affected by these strategies are depicted on The Environmental Resource Management Plan, in the rear pocket of this document.

4.4.1 Vegetation Management Areas

These areas contain significant stands of Joshua Trees and California Juniper, the threatened Alakalai mariposa and Mojave spine flower, or fragile riparian and desert wash habitat. Development in accordance with the underlying land use designations can proceed provided that the following protective mitigation measures are taken:

Joshua Tree and California Juniper Habitat (south of Avenue L and west of 20th Street West)

1. Eighty (80) percent of existing Joshua Trees and California Juniper, or a percentage determined by a qualified botanist to be sufficient for the habitat's continued productivity, shall be retained.

2. On submittal of zone change application or subdivision map, whichever is precedent, the developer/owner shall include:

    a. an aerial photograph of the site

    b. a report by a qualified botanist which

        (1) depicts the location of each Joshua Tree and California Juniper on the site

        (2) discusses their age and health

    c. a plan for the attainment of the above standard

    d. a site landscaping plan

Alakalai Mariposa and Mojave Spine Flower Habitat (Areas bounded by 3rd Street East, 10th Street East, Avenue H, and Avenue H-8 and Division Street, 5th Street East, Avenue L, and Avenue M)

1. All Alkalai mariposa and Mojave spine flower vegetation, or a percentage determined by a qualified botanist to be sufficient for the habitat's continued productivity, shall be retained.

2. On submittal of zone change application or subdivision map, whichever is precedent, the developer/owner shall include:

   a. an aerial photograph of the site

   b. a report by a qualified botanist which

      (1) depicts the location and distribution of Alkalai mariposa and Mojave spine flower on the site

      (2) discusses their age and health

   c. a plan for their preservation

   d. a site landscaping plan

<u>Desert Creeks and Washes</u>

1. All riparian and desert wash vegetation determined to be significant and necessary for its continued productivity shall be preserved.

2. On submittal of zone change application or subdivision map, whichever is precedent, the developer/owner shall include:

   a. an aerial photograph of the site

   b. a report by a qualified botanist which

      (1) depicts the location and distribution of significant riparian and desert wash vegetation on the site

      (2) discusses the significance of the vegetation and justifies the need for its preservation

   c. a plan for the preservation of those habitats considered significant

   d. a site landscaping plan

4.4.2 Floodprone Management Areas

For development to proceed, appropriate protective measures shall be implemented, subject to approval of the City Engineer. Such would require that the elevation of the project grade be at least one foot above the level of the "design flood"; the project could not adversely affect the drainage on adjacent properties; and any development or design feature which would increase the level of the "design flood" by more than one foot shall be offset by approved design improvements (at the developer's expense).

4.4.3 Hillside Management Areas

a. Terrain where the average slope exceeds 15 percent are classified as "Hillside Management Areas". The objective of this classification is to relate the number and distribution of structures and land uses to the topographic, geological, and hydrological conditions of the hillsides so that the terrain will retain its natural and scenic character, and the danger to life and property by the hazards of fire, flood water pollution, soil erosion, and land slippage will be minimized.

b. Consistent with these objectives, compatible uses have been identified for lands located within the Hillside Management Areas. These uses include residences, recreation, agriculture, mineral extraction, and certain other uses commonly found in hillside areas.

   Residential densities shall be limited to those defined in the table given below. It is intended that densities may be accumulated and developed in a "clustered" manner on the flatter lands, in a manner consistent with development in rural hillside areas.

   Provision of open space in a natural state is also an important part of the Hillside Management Area concept. To this end a minimum of 75 percent of the Hillside area to be included within a development proposal shall be retained in a natural condition. Where the average slope of the property, or portion thereof, exceeds 50 percent, 90 percent of that portion of the property which exceeds 50 percent slope shall be retained in a natural condition. Within these required natural areas, replacement of vege-

tation required for fire suppression purposes or recreational riding and hiking trails (requiring minimum grading) will be permitted.

The following slope/development/open space standards shall apply to the designated Hillside Management Areas.

Average Slope	Max. Project DU/AC	Min. O/S
15 - 29.9%	0.5	75%
30 - 49.9%	0.2	75%
50%+	0.05	90%

Areas of one acre or more within the designated Hillside Management Area which have an average slope of less than 15 percent may be developed in accordance with the Non-Urban Category.

c. Roadway right-of-way requirements should vary to reflect the unique topographic characteristics of hillsides. When considering a specific project, the developer should work closely with the City Engineering and Planning Departments to determine the minimum width necessary for health and safety.

4.4.4 Parks and Recreation Development

A comprehensive system of parks and recreation services is proposed to meet the needs of the residents of the City of Lancaster and surrounding area. Included are regional, neighborhood, and community parks, linear recreation corridors and greenbelts, bikepaths, and commercial recreation facilities. Elements of the proposed recreation system are illustrated on Figure and described in Tables 4.4 and 4.5.

In addition, it is recommended that bikepaths be constructed along the following routes:

a. Avenue K between 35th and 30th Streets West;
b. 30th Street West between Avenues K and I;
c. Avenue I between 30th and 20th Streets West;
d. Avenue J between 30th Street West and Division;
e. Avenue J-8 between 30th Street West and Heaton Avenue;
f. Heaton Avenue between Avenues J-8 and J-10;
g. Avenue J-10 between Heaton and Gadsen Avenues;
h. Gadsen Avenue between Avenues J-10 and K;
i. 10th Street West between Avenues K and K-8;

TABLE 4.4

RECOMMENDED PARKSITE LOCATION, SIZE, AND RECREATIONAL FACILITIES

(For a definiton of the word "basics as used here, refer to Appendix D)

PROPOSED REGIONAL PARKS	PROPOSED COMMUNITY PARKS	PROPOSED NEIGHBORHOOD PARKS	PROPOSED SCHOOLS
1. Paralleling Antelope Valley Freeway, between Lake Lancaster and Civic Center Park: a combination bicycle path/par course approximately 185 acres in size.	1. Vicinity of 30th Street West and Lancaster Blvd: 30-acre park developed with basics plus tennis courts, wading pool, horseshoes, suffleboard.	1. Vicinity of Ave. I and 20th Street East: 15-acre park developed with basics.	1. Southwest corner Ave. J-8 and 20th Street West: future high school.
2. Southeast of intersection of Ave. K and 15th Street East: a full-size golf course approximately 240 acres in size.	2. Vicinity of intersection of Antelope Valley Freeway and Ave. I: 30-acre park developed with basics plus community center, gymnasium, tennis courts, athletic field lighting, swimming pool, horseshoes, shuffleboard.	2. Vicinity of Ave. K-8 and 5th Street West: 15-acre park developed with basics.	2. Southwest of intersection of Ave. K and 20th Street West: future elementary school.
	3. Vicinity of Division Street and Ave. H-8: 30-acre park developed with basics plus athletic field lightint, tennis courts, shuffleboard and horseshoes.	3. Vicinity of Ave. K-8 and 20th Street West: 15-acre park developed with basics.	
	4. Vicinity of 10th Street East and Lancaster Blvd: 30-acre park developed with basics plus tennis courts, community center, alternate swimming pool site (if no pool built at High School) gymnasium, wading pool, shuffleboard, horseshoes.		

(continued)

TABLE 4.4
(continued)

PROPOSED REGIONAL PARKS	PROPOSED COMMUNITY PARKS	PROPOSED NEIGHBORHOOD PARKS	PROPOSED SCHOOLS
	6. Enlarge existing Rawley-Duntley Park by 10 acres; develop with community center, athletic field lighting, tennis courts, horseshoes, shuffleboard.		
	7. North of intersection of Ave. J-8 and 20th Street East: 30-acre park developed with basics plus tennis courts, swimming pool, athletic field lighting, horseshoes, shuffleboard.		
	8. Vicinity of Ave. K and 5th Street East: 30-acre park developed with basics plus swimming pool, tennis courts, athletic field lighting, community center, horseshoes, shuffleboard.		

TABLE 4.5

LANCASTER POPULATION
AND PARK ACREAGE FIGURES

TYPE RECREATIONAL FACILITY	ACRES		
	Existing 1979	Proposed by Year 2000	Total Year 2000
Neighborhood Park Sites	4 sites--27 A.	5 sites (recommended 15 A. each)--75 A.	9 sites--102 A.
Community Park Sites	3 sites--93 A.	6 sites (recommended 30 A. each)--180 A.	9 sites--273 A.
Regional Park Sites	0		
Golf Course		165 A.	350 A.
Linear Park		185 A.	
School Sites			
Elementary (3 A. recreational facility credit each)	12 sites--36 A.	1 site--3 A.	13 sites--9 A.
High School and College (5 A. recreational facility credit each)	2 sites--10 A.	1 site--5 A.	3 sites--39 A.
TOTAL	166 A.	613 A.	779 A.
RECREATIONAL ACREAGE NEEDED AT 5 A. PER 1,000 POPULATION	Needed 1979: 325 A.	Needed 2000: 625 A.	Total Proposed 2000: 779 A.
DEFICIT OR SURPLUS ACREAGE	159 A. Deficit		154 A. Surplus

j. Avenue K-8 between 10th Street West and the Antelope Valley Freeway;
k. Avenue K between Division and 5th Street East;
l. Avenue J between 10th and 20th Streets East;
m. Lancaster Boulevard between Division and 30th Street East;
n. 20th Street East between Division Boulevard and Avenue J-8;
o. 5th Street East between Avenues I and H-8;
p. Avenue H-8 between 5th and 3rd Streets East;
q. 10th Street West between Avenues I and H-6;
r. Avenue H-6 between 10th Street West and Fig Avenue;
s. 15th Street West between Avenues I and H-8;
t. 12th Street West between Avenues I and J;
u. Division between Avenue I and Lancaster Boulevard.

4.5 Programs

Programs recommended to implement the preceding policies and management strategies include:

1. Prepare an ordinance for the retention of Joshua Trees and other significant vegetation.

2. Revise the subdivision ordinance to require the submittal of a vegetation inventory and landscaping plan for proposed developments in Vegetation Management Areas and establish criteria for their review.

3. Adopt and enforce the resource management strategies outlined in section 4.4 of this plan.

4. The City shall survey the northwest Vegetation Management Area (VMA) and determine the location of creeks and washes therein. These shall retain the VMA overlay classification and all other floodprone areas excluded. Pertinent VMA standards shall apply to development within these areas thereafter.

5. As floodprone areas outside the City's corporate limits are annexed, surveys shall be conducted to delimit the location of creeks and washes therein. Those identified shall be assigned a VMA overlay and all development standards pertaining thereto shall apply.

6. Initiate procedures for the conduct of a regional archaeological reconnaissance. Assess proposed developments a fee to finance the City's share of this study. The fee should be based on the type, scale, intensity, and density of uses proposed.

7. Initiate a consumer water conservation education program.

8. Investigate, in association with the County of Los Angeles Engineer and Lahontan Regional Water Quality Control Board, the feasibility of the re-use of processed waste water for agricultural, landscaping, maintenance, and other activities for which it may be appropriate.

9. Participate with the County of Los Angeles Engineer, Flood Control District, and other appropriate agencies in the establishment and funding of a groundwater recharge program in the drainage areas of Little Rock, Amargosa, Anaverde, and Big Rock Creeks.

10. Prohibit the watering of exterior landscaping, except as required for specialized vegetative species, during the hours of 10:00 a.m. to 6:00 p.m. during the months of June through September.

11. Establish a revolving fund for the acquisition of unique ecological areas and significant natural features that are not already located on public lands. Matching funds from the State and Federal governments should be obtained whenever possible. The City should also encourage the acquisition of similar parcels by private conservation organizations whenever possible.

12. Incorporate into the building permit process requirements for the stabilization of topsoil during construction activities. Such should include daily wetting of the soil, compaction, or coverage with protective techniques on windy days.

13. Develop a plan for the use of off-road vehicles in the City and its planning area. Generally, these should be banned from public streets, areas of significant vegetation, and areas of highly erosible soil. Specific off-road vehicle parks should be incorporated in the Parks and Recreation Development Plan.

14. Prepare a master landscaping plan for public rights-of-way and properties in the City. Emphasis should be placed on the establishment of landscaped focal points at key entries to the City, activity nodes, and major intersections. Native vegetation should be emphasized.

15. Prepare a master landscaping plan for flood control channels. Broad landscaped swales should be emphasized.

16. Coordinate with the County of Los Angeles Agricultural Commissioner and State of California the investigation and establishment of strategies increasing the feasibility of agricultural production in the City's planning area. Among the techniques which should be explored are subventions to pay a portion of the costs of water, lowering of property valuation, and enactment of the Williamson Act ("California Land Conservation Act").

17. Designate the drainage areas of the Little Rock and Amargosa Creeks which pass through the City and planning area as "potential resource extraction areas".

18. Incorporate into the zoning ordinance and building code provisions for the protection of solar access for each developable parcel of land.

19. Revise building codes, as necessary, to allow for the incorporation of solar energy systems into new and existing construction.

20. Revise building code standards, as necessary, to reduce the heat gain and loss of new structures.

21. Enforce the provisions of the land use plan for the establishment of activity centers throughout the City and reduction of "strip" commercial.

22. Prepare a comprehensive parks and recreation master plan.

23. Develop the vacant five-acre parcel of neighborhood park land owned by the City northeast of the intersection of Avenue J and 20th Street West. This additional urban park could help ease the overuse of both Jane Reynolds and El Dorado Parks.

24. Place the majority of the park acquisition budget into parcels 20 to 50 acres in size.

25. Pursue a vigorous program of park acquisition. A park funding program should be established, which would include:

    - general revenue funds
    - developer fees in lieu of provision of land (Quimby Act)
    - State and Federal sources
    - contribution of land and facilities by developers.

26. Establish a non-profit foundation for the support of recreation, parks, and cultural arts so that donations and gifts from the community can be accepted and dispersed.

27. Conduct a study assessing the need and feasibility of establishing park and recreation user fees.

28. As a function of the City Department of Parks and Recreation and Economic Development Committee, encourage the operators of commercial recreational facilities, especially community theaters, gymnasiums, skating rinks, riding stables, and miniature golf courses to locate in Lancaster. Such encouragement could take the form of favorable leases on City-owned land, deferred payment of City sales taxes for a specified length of time, etc.

29. Negotiate a joint powers agreement with the public school districts, allowing supervised after-hours and weekend use of school grounds by the general public. The two facilities perceived as most needed near residents' homes -- a teen center and a multipurpose recreation center -- and the two facilities seen as most lacking in the community at large -- a swimming pool and a public gymnasium -- could all conceivably be provided by the City in this way, probably for no more than the cost of a recreation leader, materials, and whatever schoolground maintenance the program caused to be necessary. Locating these facilities at several public schools around the City would help assure that they would be near the majority of users' homes.

30. Enact an ordinance requiring developers to dedicate land for parks and open space within new housing developments.

31. Include the provision of facilities for bicycle and pedestrian use in the design of all future local parks and subdivision if feasible.

32. Conduct an expanded recreation needs survey that would yield the opinions of 2% of the City's population to enhance reliability.

33. Pursue the annexation of the Lake Lancaster area.

34. Establish an ordinance to implement the "transfer of development rights" concept for the acquisition of open space, recreation lands, and historic sites. This process should only be initiated by the City and would involve:

    a. designation of areas by the City which are <u>currently</u> zoned for use which should be preserved as open or recreation space as a

potential "transfer of development rights" parcel (TDR);

b. as the City or land owner seeks to develop a TDR parcel, the City should seek to find owners of other parcels who wish to obtain development rights greater than permitted by the zoning on their property and negotiate with these a financial sale, or transfer, of development rights from the parcel to be used for recreation or preserved to the other parcel;

c. the City must determine, in a formal, circulated report, that the transfer of development rights will

(1) not incur significant economic costs to the City and its residents,

(2) not accrue significant adverse environmental effects,

(3) not incur incompatibilities among adjacent land uses,

(4) not be accompanied by a change of zoning or General Plan designation on parcels adjacent to the parcel to which development rights are being transferred,

(5) not exceed the capacity of public service systems required to support the greater use, and

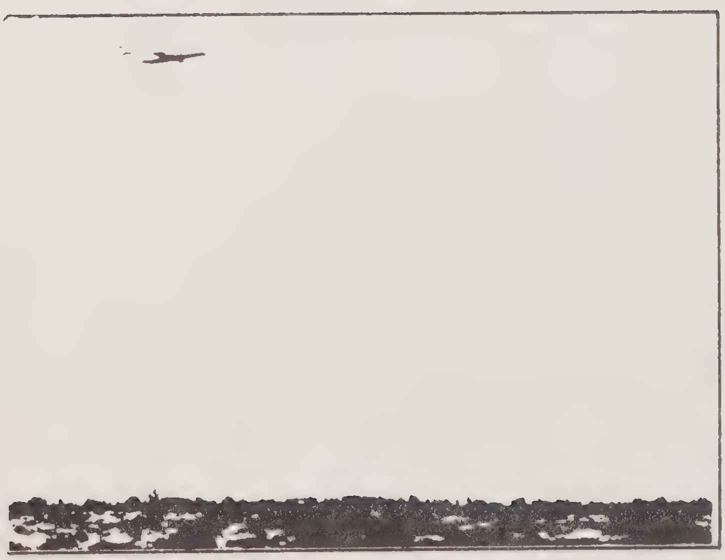
(6) not adversely affect the long-term development phasing of the City.

35. Establish procedures and standards (by the City Engineer and County Drainage Maintenance District) for the recreational use of flood channels.

36. Establish bicycle paths in selected highway corridors.

37. Plan and establish cross-town linear parks containing jogging, bicycling, and equestrian trails. These shall be developed in utility easements, flood control channels, and other opportune rights-of-way.

5. Noise Element



1.0 Introduction

As a mandated part of the General Plan, the Noise Element is intended to serve as the City of Lancaster's guide in public and private development matters related to outdoor noise.

The basic goal of the Element is to outline a comprehensive plan to achieve and maintain a noise environment that is compatible with a variety of human activities in different land uses. To achieve this goal, the Element provides a quantitative estimate of noise exposures, land use noise standards, and policies and implementation measures for controlling noise. This information is intended for use in conjunction with other adopted policies of the General Plan, particularly those of the Circulation, Land Use, and Housing Elements.

1.1 Scope

This Element evaluates all major transportation facilities, including airports (Air Force Plant 42, Fox Field, and the proposed Palmdale International Airport), highways, and railroads. The data produced includes exposure zones that can be used for planning purposes and for developing policy guidelines.

1.2 Organization of This Element

This Noise Element has been prepared in two parts. The first part, the Policy Report, is concerned with the implications of the technical findings for noise control. The second part, the Technical Report, contains the quantitative estimates of existing and forecasted noise levels in the City, and documents the methods used in computing noise exposure. Together, these two sections constitute the Noise Element.

The Noise Element is one of the more technical Elements of the General Plan. However, the approach of this report is to present discussions of noise primarily in qualitative form and to rely on the use of figures in presenting certain mathematical concepts. Those wishing a more detailed technical explanation are referred to the works listed in the General References.

2.0 Legislative Mandate and Content of the Noise Element

2.1 Statutory Requirements

In making City and County governments in California responsible for a Noise Element in their General Plan, the Legislature has recognized the steady escalation of outdoor noise as a serious environmental and health hazard. Unlike other hazards faced by California residents, such as earthquakes or floods, noise is generated primarily by human activities. Careful and appropriate planning is essential to controlling the impact of noise on the community. Specific authority for this Element of the General Plan is contained in Government Code Section 65302(g), which requires the following:

> *A noise element which shall recognize guidelines adopted by the Office of Noise Control pursuant to Section 39850.1 of the Health and Safety Code, and which quantifies the community noise environment in terms of noise exposure contours for both near and long-term levels of growth and traffic activity. Such noise exposure information shall become a guideline for use in development of the land use element to achieve noise compatible land use and also to provide baseline levels and noise source identification for local noise ordinance enforcement.*
>
> *The sources of environmental noise considered in this analysis shall include, but are not limited to, the following:*
>
> *(1) Highways and freeways.*
>
> *(2) Primary arterials and major local streets.*
>
> *(3) Passenger and freight on-line railroad operations and ground rapid transit systems.*
>
> *(4) Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.*
>
> *(5) Local industrial plants, including, but not limited to, railroad classification yards.*
>
> *(6) Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.*
>
> *The noise exposure information shall be presented in terms of noise contours expressed in community noise equivalent level*

(CNEL) or day-night average level (L_{dn}). CNEL means the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m. L_{dn} means the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.

The contours shall be shown in minimum increments of 5 dB and shall continue down to 60 dB. For areas deemed noise sensitive, including, but not limited to, areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use areas deemed noise sensitive by the local jurisdiction, the noise exposure shall be determined by monitoring.

A part of the noise element shall also include the preparation of a community noise exposure inventory, current and projected, which identifies the number of persons exposed to various levels of noise throughout the community.

The noise element shall also recommend mitigating measures and possible solutions to existing and foreseeable noise problems.

The state, local, or private agency responsible for the construction, maintenance, or operation of those transportation, industrial or other commercial facilities specified in paragraph 2 of this subdivision shall provide to the local agency producing the general plan, specific data relating to current and projected levels of activity and a detailed methodology for the development of noise contours given this supplied data, or they shall provide noise contours as specified in the foregoing statements.

It shall be the responsibility of the local agency preparing the general plan to specify the manner in which the noise element will be integrated into the city or county's zoning plan and tied to the land use and circulation elements and to the local noise ordinance. The noise element, once adopted, shall also become the guideline for determining compliance with the State's Noise Insulation Standards, as contained in Section 1092 of Title 25 of the California Administrative Code.

2.2 Relationship to Other General Plan Elements

The Noise Element is most closely related to the Circulation, Land Use, and Housing Elements. The principal noise sources evaluated in the Element are transportation noise sources, which are road, rail, and air traffic. Noise generated by these sources depends primarily on the number and type of vehicles in operation as planned for in the Circulation Element.

Inseparable from the circulation considerations in the General Plan are the locations and types of land uses throughout the City. The locations of circulation routes in relation to different land uses can be a major determining factor of noise exposure. It is important that consideration be given in the Land Use Element to separating the most sensitive land uses from the sources of high noise levels. Land use noise standards are recommended as a part of this Element to assist in these considerations.

The Housing Element is related to the Noise Element in that both the location and insulation requirements of housing are, in part, determined by noise exposures.

3.0 Noise Exposure

3.1 Introduction

The existing and forecasted noise levels in the City of Lancaster are presented in graphic form on the Noise Contours Maps and in tabular form in Appendices G and H of this plan. These noise levels are expressed in A-weighted decibels in terms of Day-Night Noise Levels (abbreviated L_{dn}). Detailed explanations of L_{dn} noise levels and the methods used to compute them are presented in the Technical Report. The following brief discussion is intended to provide a basic understanding of the terms to facilitate use of the Noise Contours Maps and the Appendices. Appendix E of this plan provides a glossary with additional discussion of the more technical language.

Common noises experienced by each of us daily may range from a whisper to a locomotive train passing by. The range of sound energy represented by these two events is so large that it cannot be represented mathematically without using numbers in the millions and billions. To avoid this inconvenience, sound levels have been compressed in a standard logarithmic scale called the decibel (dB) scale. The reference level for the scale, 0 dB, is not the absence of sound, but the weakest sound a person with very good hearing can detect in a quiet place. The most important feature of the decibel scale is its logarithmic nature. An increase from 0 to 10 dB represents a tenfold increase in sound energy, but an increase from 10 to 20 dB represents a hundred fold increase, and from 20 to 30 represents a thousand fold increase over 0 dB.

The average range of sounds that we are commonly exposed to generally falls in the 30 to 100 dB range. However, not all sound waves affect us equally. The human ear is more sensitive to high pitch sounds, such as a whistle, than it is to low pitch sounds, such as a drumbeat.

To account for this effect in noise measurements, it is necessary to use an electronic filter in sound level meters which acts as the equivalent of the human ear in filtering out some of the lower frequencies of sound. This filter is called the A-scale weighting network, and is abbreviated by the A in the notation dB(A).

A-scale decibel measurements can be taken at any time in the community to record the sound levels of various noise sources. However, to develop an indicator of varying sound levels occurring over the 24-hour day, it is necessary to

average the sound occurring at each moment throughout the day. The Day-Night Noise Level is the result of this procedure, and gives a general, single-number index of noise exposure over an average 24-hour day. In computing the L_{dn} levels, it is also necessary to apply a weighting to noise that occurs at night to account for the greater sensitivity that people have to noise at night. L_{dn} noise levels can be developed for road traffic, as well as for rail and air traffic for which the measure has been used traditionally. As examples of typical L_{dn} noise level ranges, Figure 5.1 gives ranges of L_{dn} decibel exposures ranging from quiet rural areas to an area under the flight path of a major airport.

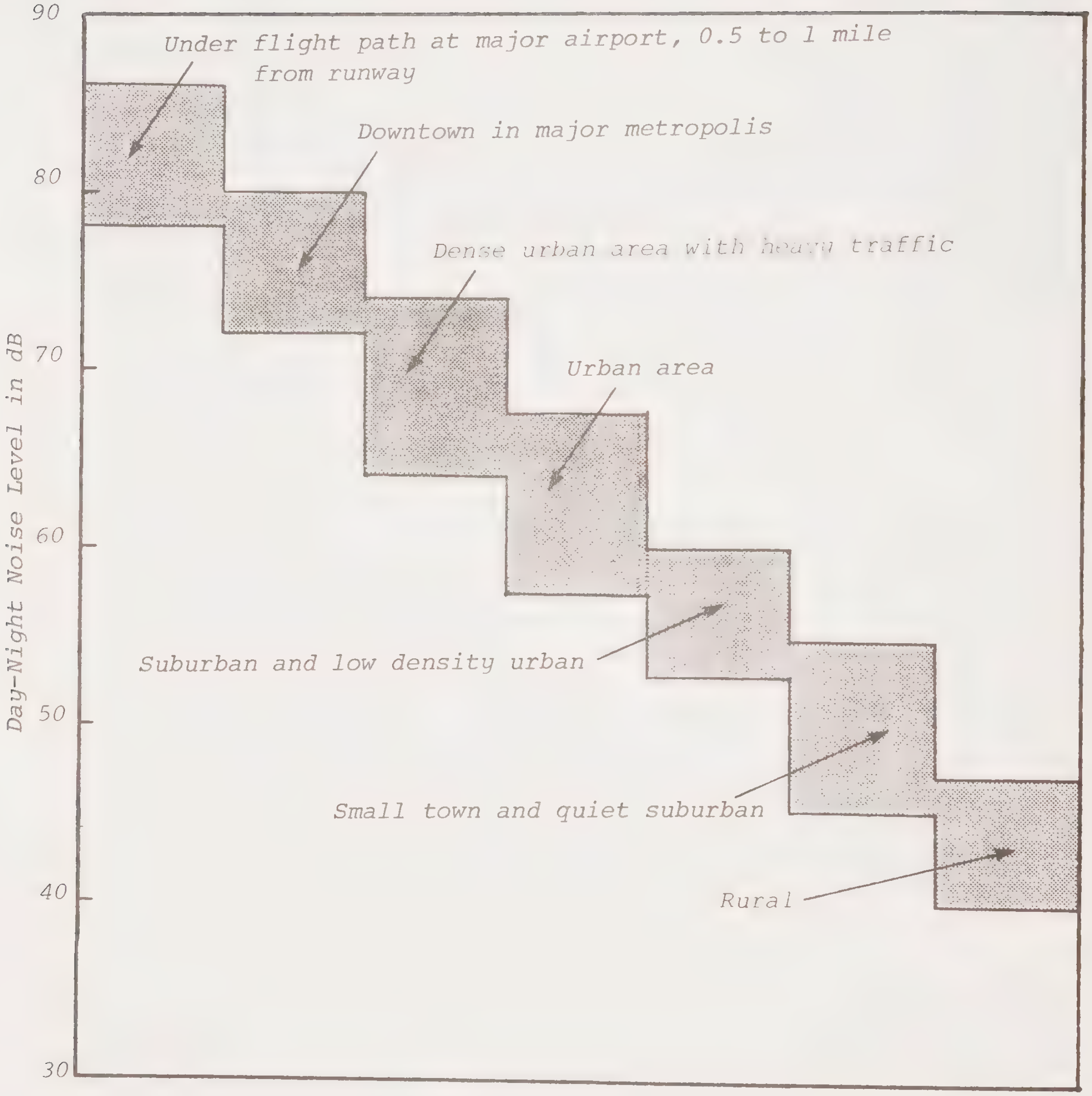


FIGURE 5.1 Typical L_{dn} Noise Level Ranges.

SOURCE: Bolt, Beranek, and Newman, Incorporated, 1974.

3.2 Existing Conditions

Major sources of noise within the urban areas of the City of Lancaster are vehicular traffic, aricraft operations, and railway operations. In certain areas, noise from industrial operations is also significant. Throughout most of the non-urbanized areas, however, the absence of major noise sources results in a quiet environment typical of most rural and suburban areas.

The noise exposure of the City's population was estimated using the Existing Noise Contour map (in the rear pocket of this document). Schools and hospitals were monitored as noise sensitive land uses (Appendix H) to determine if potentially incompatible noise levels impinged on them. The following are summary conclusions regarding the existing noise environment in the City:

1. Generally, the City of Lancaster is quiet, with about 60% of the population residing in areas with an L_{dn} less than 60 dB(A) (Table 5.2). However, a significant portion of the population is exposed to high noise levels (L_{dn} greater than 65 dBA).

2. The most significant sources of high noise levels are the Southern Pacific railroad and Air Force Plant 42. These two noise sources are responsible for the greatest percentage of high noise exposure within residential areas.

3. Road traffic, particularly on Avenues J and I, 10th Street West, and the Antelope Valley Freeway, is a significant local noise source.

4. Road traffic is responsible for high noise levels at several sensitive land use areas. Potentially major noise conflict areas are listed in Table 5.3. The incompatibility is termed potential because the land use was evaluated only at a general level. Site specific acoustic analysis is necessary to confirm and determine the nature and extent of the noise problem. It should be noted that the potential noise impacts on Antelope Valley Hospital and Lancaster Community Hospital are mitigated by the setbacks of these structures from the local roadways. These areas have been identified as potential conflict areas based on criteria in Table 5.4 and other criteria established in sections 5 and 6 of this Policy Report.

TABLE 5.2

Current Noise Exposure
(Estimate)

Residential Land Use	L_{dn} Noise Exposure, dB(A)				
	>75	75-70	70-65	65-60	<60
Non-Urban					
No. of People	23	470	923	1712	233
% of Population	0.05	1.0	2.0	3.8	0.5
Low to Moderate Dens.					
No. of People	28	106	2833	6177	22,924
% of Population	0.06	0.2	6.2	13.6	50.5
High Density					
No. of People	93	385	1341	4208	3910
% of Population	0.21	0.9	3.0	9.3	8.6
Total					
No. of People	144	961	5097	12,097	27,067
% of Population	0.3	2.1	11.2	26.7	59.7

TABLE 5.3

Potential Noise Conflict Areas

Land Use	Source
<u>Moderately Impacted Land Use</u>	<u>Source</u>
Parkview School	Avenue J
Antelope Valley Hospital	Avenue J
Lancaster Convalescent Hospital	Avenue J
<u>Slightly Impacted Land Use</u>	
Antelope Valley High School	Lancaster Boulevard and Division Street
Lancaster Community Hospital	10th Street West
Joshua School	Air Force Plant 42
<u>Minimally Impacted Land Use</u>	
Antelope Valley Hospital	15th Street West
Antelope Valley College	Avenue K and 30th Street West
Antelope Valley High School	Southern Pacific Railroad
Paraclete High School	Air Force Plant 42
Sierra School	Air Force Plant 42

TABLE 5.4

Summary of Noise Levels Identified as Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety

(Source: U.S. Environmental Protection Agency, 1974)

EFFECT	LEVEL	AREA
Hearing Loss	L_{eq} (24) $\geq$70 dB	All areas
Outdoor activity interference and annoyance	L_{dn} $\geq$55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use
	L_{eq} (24) $\geq$55 dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	L_{dn} $\geq$45 dB	Indoor residential areas.
	L_{eq} (24) $\geq$45 dB	Other indoor areas with human activities such as schools, etc.

Explanation

L_{eq} (24) - Equivalent A-weighted Sound Level over a 24-hour period.

L_{dn} - Day-Night average sound level - the 24-hour A-weighted Equivalent Sound Level, with a 10 decibel penalty applied to nighttime levels.

dB - decibels.

3.3 Future Conditions

In planning for noise control, it is necessary to estimate what the future noise environment may be like. Accordingly, noise level forecasts for the year 2000 were included as part of the technical analysis (refer to Future Noise Conditions in the rear pocket of this document). In general, the future noise environment will be controlled by three factors:

1. The expected increase in the number of noise sources (i.e., traffic volumes).

2. The application of noise control technology to various sources.

3. Noise mitigation measures applied to exterior walls and exterior areas to decrease interior noise levels.

It is reasonable to assume that currently available noise control technology will be applied to some noise sources, and that this will counterbalance the increase in traffic, resulting in the same noise levels as currently exist or in decreased noise levels. This is particularly true for vehicular models for which substantial noise reductions in future models are required by law (California Vehicle Code, Sections 27200, 27202, and 27204). However, expected increases in rail traffic and the construction of Palmdale International Airport will increase noise levels within the City. Summary conclusions regarding the future noise environment are as follows:

1. Based on future land use plans, the percentage of the City's population exposed to noise levels greater than an Ldn of 75 dBA will be eliminated and the percentage exposed to levels greater than 70 dBA will be slightly reduced. However, a significant proportion will still be exposed to noise levels above an Ldn of 65 dBA (13.1%, Table 5.5), and a significantly greater number of people (28,967 people in year 2000 as opposed to a current 6,202 people) will be exposed to these high noise levels due to the substantial anticipated increase in the City's population. These projected noise levels are the result of anticipated substantial increases in rail traffic and continued operation of AFP 42 in conjunction with Palmdale International Airport. If operations at AFP 42 are substantially reduced or eliminated, a major proportion (about 60%) of the noise impact within the City will be reduced.

2. Even though substantial increases in road traffic are expected in the City, local noise exposure along the

TABLE 5.5

Estimated Future Noise Exposure

Residential Land Use	L_{dn} Noise Exposure, dB(A)			
	>70 *	70-65	65-60	<60
Non-Urban				
No. of People	140	1902	6029	14,569
% of Population	0.06	8.7	2.7	6.6
Single Family				
No. of People	152	11,254	37,180	79,792
% of Population	0.07	5.1	16.9	36.3
Multifamily (MR)				
No. of People	242	3186	13,000	22,925
% of Population	0.1	1.4	5.9	10.4
Multifamily (MR 2)				
No. of People	5699	6392	6626	10,733
% of Population	2.6	2.9	3.0	4.9
Total				
No. of People	6233	22,734	62,835	128,019
% of Population	2.8	10.3	28.6	58.2

*Areas exposed to a noise exposure in excess of an Ldn of 75 dB(A) are omitted due to the small number of areas affected.

roads is expected to decrease slightly due to widened roads, slower speeds, and lower vehicle noise.

3. The expansion of residential land use to outlaying areas of the City will increase traffic noise slightly along local roads.

4.0 Noise Control

4.1 Noise Regulations

The problem of excessive noise has been given greater attention by the legislative and administrative branches of government in recent years, resulting in the enactment of various laws and regulations regarding noise. This section summarizes those laws and regulations that provide the legal and planning context within which the goals and policies of this Element would be implemented. In addition, this section considers potential noise control strategies to meet the standards and criteria set by laws and regulations.

Unfortunately, there has been little coordination among the agencies responsible for noise control, and this has resulted in the use of different noise evaluation techniques and standards in noise regulations. This non-uniform approach makes comparison and use of standards and regulations a confusing matter for both the general public and those government officials responsible for compliance at the local level. Table 5.6 summarizes the existing noise regulations that pertain to the City of Lancaster. Although there is a certain amount of overlap in these regulations, most have a limited range of application. In addition to those laws shown in the table, both the National Environmental Protection Act (NEPA) and the California Environmental Quality Act (CEQA) require environmental analysis of certain developments including an analysis of potential noise problems at the project site.

The most significant of the laws listed in Table 5.6 is the Noise Control Act of 1972. This law essentially authorizes the EPA to coordinate noise regulation at the national level. It also authorizes the EPA to set noise emission limits for major noise sources including aircraft, motor vehicles, and trains. These emission standards can be expected to have an important effect on future noise levels in the City. In addition, health and welfare criteria for noise exposure limits have been published in compliance with the Act, and these criteria have been incorporated into the recommended land use compatibility standards. In publishing these criteria, the EPA has selected and recommended the L_{dn} measurement scale for use as a uniform noise evaluation scheme. If nationwide use of this measurement becomes a reality, much of the existing confusion regarding noise should diminish. This should enable the City to enact noise control regulations and measurements consistent with other cities and counties as well as with the State and Federal government.

TABLE 5.6

EXISTING FEDERAL AND STATE NOISE REGULATIONS

	Responsible Agency	Regulation/Standard	Noise Source Regulated	Summary
FEDERAL	Environmental Protection Agency	Public Law 92-574 (Noise Control Act of 1972)	All	Gives EPA responsibility to identify noise sources, set standards for limiting emissions, publish health and welfare criteria, set product labeling standards, and recommend aircraft standards.
FEDERAL	Federal Aviation Administration	FAR Part 36	Aircraft	Sets emission limits for aircraft under specified flight conditions for type certification.
FEDERAL	Federal Highway Administration	FHPM 7-7-3	Highways, outdoor noise environment	Sets land use compatibility requirements for developments adjacent to Federal-aid highways.
FEDERAL	Department of Housing and Urban Development	Title 24 of the CFR, Part 51	Outdoor noise environments	Sets noise acceptability requirements for developments requesting Federal loan assistance
STATE OF CALIF.	Department of Labor	Occupational Safety and Health Act of 1970	Outdoor/indoor noise environments	Specifies maximum noise exposure levels for workers.
STATE OF CALIF.	Department of Aeronautics (Caltrans)	California Administrative Code, Title 4, Sub-chapter 6	Airports, aircraft	Specifies maximum noise exposures for sensitive uses near airports; sets standards for aircraft operations.

(continued)

TABLE 5.6
(continued)

	Responsible Agency	*Regulation/Standard*	*Noise Source Regulated*	*Summary*
STATE OF CALIFORNIA	Department of Motor Vehicles	California Vehicle Code Section 23130	Motor vehicles	Sets noise emission limits for motor vehicles under specified operating conditions.
	Department of Transportation (Caltrans)	Streets and Highways Code	Highways	Requires corrective action when noise levels from new freeways exceed set limits in nearby schools.
	Commission of Housing and Community Development	California Administrative Code, Title 25, Article 4	Outdoor/indoor noise environments	Limits interior noise levels resulting from outdoor levels in new multi-family units.
	Council on Intergovernmental Relations	California Government Code, Section 65302(g), Amended by Senate Bill 860 (Beilenson, 1975)	Outdoor noise environment	Requires quantitative Noise Elements in all City and County General Plans.
	Department of Health, Office of Noise Control	Noise Insulation Standards	Indoor noise environment	Sets statewide noise insulation standards for housing.

4.2 Noise Control Strategies

Actions to control noise can occur at the source, along the transmission path, at the receiver, or any combination of these. As noted previously, source controls are primarily the responsibility of the Federal government, and, to a lesser degree, the State government. Control of the reception of noise has been a local government responsibility through the local government's traditional authority over land use.

Generally, noise control strategies available to the local government include:

1. Encourage voluntary noise reduction measures by property owners and developers.

2. Require noise reduction based on environmental performance standards.

3. Mandate compatible land use through zoning and planning, including subdivision regulations and public service planning.

4. Encourage and require noise attenuation through a housing rehabilitation program, including reconversion or relocation of incompatible land uses.

5. Enact noise control through government ownership of affected property, either direct ownership or through leases, easements, or ownership of development rights.

The first strategy would include providing information to builders and the general public regarding the importance of noise reduction and different construction and site development techniques for noise compatibility. Various means of achieving this objective include review of proposals by an architectural review board, design services by government staff during the permit application process, and maintenance of an acoustical information library for developers and the public. Education of the public is an important aspect of this approach since public awareness of noise problems can affect the marketability of developments. Such an approach can be successful in solving noise problems provided there is a degree of cooperation between the local government and developers of if the development market is a buyer's market and there is a demand for noise compatibility.

While this approach minimizes official restrictions, it bases noise control on economic incentives, rather than environmental concerns. Given the City's desire to provide residents with an appropriately quiet environment, this option alone would not appear adequate and is not highly attractive.

The adoption and enforcement of environmental performance standards involves the development of a noise ordinance that would set quantitative limits on the noise levels emitted by local sources and the levels permitted within specified zones of the City. The noise ordinance would include the following source controls:

1. Operational noise level limits for residential, commercial and industrial activities;

2. operational noise level limits for construction activities; and

3. operational noise level limits for motor vehicles.

In addition, it would include land use development standards that can be implemented through the building code, such as:

1. Exterior noise-insulation requirements;

2. interior noise-insulation requirements; and

3. internal noise-control requirements (plumbing noise, etc.).

Land use restrictions are a simple and effective method of controlling noise problems. The basic approach is the prohibition of noise sensitive uses in areas with high noise exposure. Zoning is an excellent means of restricting incompatible uses by performing three functions:

1. Preserving existing compatible land uses;

2. preventing change from compatible to incompatible uses; and

3. promoting a compatible use where no dominant use has been established.

If development is permitted in noise-impacted areas, zoning and development standards can regulate the details of the development such as building height, buffer areas, and noise

barrier construction. Special types of development, such as cluster housing and planned unit developments, could be zoned for and designed to prevent unnecessary noise problems.

The fourth strategy could be implemented by establishing a zone in areas heavily impacted by noise, such as along the Southern Pacific Railroad, that designates those areas as "blighted" due to high noise levels. A housing rehabilitation program can be instituted in these zones to provide low interest loans for modifying housing units to comply with acceptable noise levels. These noise "blighted" areas may also qualify for redevelopment funds.

City ownership or control of development of noise-impacted land is the most restrictive approach; however, it makes regulation of land use simpler. Because of the restrictiveness of this approach and the economic problems associated with it, this strategy is best used for small, specific problem sites.

Most of the above strategies deal primarily with reducing future noise problems rather than existing ones. Where a noise problem already exists, one or more of five general solutions are available: (1) the noise can be reduced at the source; (2) the noise can be blocked by an insulating barrier; (3) the source can be removed from people and other receivers; (4) the reciever can be removed from the source; or (5) the time exposure to the noise can be minimized. As is true with most environmental hazards, preventing or reducing the cost of the future hazard is easier and less expensive than resolving existing problems.

5.0 Resource Issues

The primary issue of this Element is the control of noise, both now and in the future. The importance of this issue is indicated by a survey of community attitudes in the Antelope Valley (North Los Angeles County Plan Group, 11 July 1974). Residents felt that the single most important benefit of living in the Antelope Valley was the "small town/rural nature" of the area. An important aspect of this rural atmosphere is the relatively quiet noise environment. Noises resulting from new transportation, commercial, and industrial facilities can quickly dispel the rural atmosphere of a small, but growing, community.

A comprehensive approach to noise control involves three major programs:

1. Source and operational controls.

2. Land use and development controls.

3. Coordination, support, and monitoring activities.

As previously mentioned, authority for regulating controls depends on the particular noise problem; however, source controls have been traditionally the responsibility of Federal and State agencies, operational controls the responsibility of State and local agencies, and land use and development controls the responsibility of local agencies. In response to this division of authority, policies that are recommended in the next section of this Element have been structured to place heavy emphasis on land use controls by the City of Lancaster, with lesser emphasis placed on source and operational controls. In addition, a continuing City program of coordination, support, and monitoring activities is recommended to manage current and future noise problems, update information regarding noise exposure, and to provide a framework for consistent City action. The need for these programs is briefly outlined below.

5.1 Source and Operational Controls

While the control of noise sources is primarily a Federal responsibility, the City of Lancaster can act as a leading local force to attain source noise reductions. For example, the City should use its economic and political influence to encourage the development of source controls through legislative recommendations and suggestions for

research and development programs, as well as support of and participation in Regional, State, and Federal programs for noise abatement. The City could also take the lead in purchasing motor vehicles and other mechanical devices that have been specifically designed to minimize noise output.

Unlike source controls, operational controls require more positive action by the local government. For example, the City should work with the various agencies that are responsible for major transportation facilities. For each facility, operational characteristics should be evaluated and regulated to insure a minimum of noise. In addition, a City noise ordinance should be developed to act as a guide in adopting regulations as needed. Without this ordinance, noise regulation within the City may become haphazard.

5.2 Land Use and Development Controls

The most important aspects of noise abatement efforts are suitable land use and development controls. While several strategies have been outlined (section 4.2), land use restrictions and building code restrictions are the most viable and are the primary concern. Land use restrictions are directed toward prohibiting or avoiding land uses that are incompatible with high noise levels, while building code restrictions serve to reduce receiver sensitivity to the noise environment. Immediate implementation of these two strategies is necessary as zoning (land use restriction) is effective primarily when it precedes development, and development will rapidly increase in the future due to possible construction of Palmdale International Airport.

5.3 Coordination, Support, and Monitoring Activities

Control of noise exposure will involve various agencies to implement the future noise ordinance. For example, the Building Department would be involved in overseeing insulation requirements, and the Planning Department would be directly involved in land use decisions aimed at mitigating the negative impacts of incompatible uses.

Implementation of an effective ordinance for control of noise exposure must consist of the following items:

1. Development of noise exposure contours depicting (with a uniform measure) noise levels produced by major transportation, commercial, and industrial noise sources.

2. Development of land use compatibility criteria, defining the sensitivity of various land uses to different levels of noise exposure.

3. Establishment of the zoning ordinance itself, as well as the various administrative mechanisms necessary for its enforcement.

Over a short range of time, land use restrictions based on noise exposure contours require a static noise environment. Thus, when procedures that produce a minimum noise exposure are defined, operating characteristics should be standardized. For example, use of standardized flight tracks and climb profiles at Palmdale International Airport would help insure stable noise levels on a day-to-day basis. There can be no meaningful basis for defining land use compatibility when the noise exposure is constantly changing.

Over a long-range period, the noise environment is expected to change, hopefully in the direction of lower noise levels. The implementation of noise abatement programs, the use of quieter vehicles and machinery, changes in demand for transportation or industrial services, and increases in population in the Lancaster area are a few of the factors that will cause the noise environment to change with time. For this reason, it is imperative that noise exposure contours used for zoning purposes be periodically updated.

Because of the need to maintain an up-to-date set of noise exposure contours, coupled with requirements for the development and implementation of noise abatement strategies, it is important that specific individuals within the City be assigned to handle noise exposure problems. They should also be responsible for informing and educating citizens about the effects of noise, as well as the City's efforts to reduce noise exposure. Other responsibilities would involve coordinating the activities of County, State, and Federal agencies, recommending and monitoring the programs of these various agencies, and seeking funds for conducting noise abatement programs.

Without clear assignment or responsibility for a noise control ordinance, only piecemeal implementation of the Noise Element would occur. A specific group of individuals is required to insure the development and efficient execution of noise control programs.

Other activities might include the direction of major effort, and correspondingly, of major funding, toward research, development, and execution of noise abatement programs. Benefits of these policies must be weighted by the City with regard to overall commitments and responsibilities in other areas of City government.

6.0 Policies and Strategies

6.1 Organization

The previous sections of this report provide a summary of the technical analysis of noise in the City of Lancaster and a synthesis of the legal and planning frameworks for noise control. In this section, the general planning goal and policies are specified for the City of Lancaster. These constitute the noise control plan for the City and are the heart of the Noise Element.

These comprise a general planning goal and specific policies related to the three major noise control programs. The general goal provides a statement of the basic purpose of the Noise Element so that consistent planning is possible. It is a necessary guideline that can be held up to future proposals to determine their effect on the noise environment. The policies are suggested strategies that define specific directions for the City to take in controlling noise. These strategies would be carried out through development of City ordinances, regulations, and Council actions.

6.2 Goal and Policies

6.2.1 Goal

It shall be the goal of the City of Lancaster to ensure that its residents are free from excessive noise and abusive sounds such that: (2) sufficient information concerning the City noise environment is provided for land use planning; (b) strategies are developed for abatement of excessive noise levels; and (c) existing low noise levels are maintained and protected.

In defining this goal, primary emphasis should be placed on protecting the general public from noise levels which may be hazardous to hearing. Second in importance is the minimization of noise induced stress, annoyance, and activity interference.

6.2.2 Policies

IT SHALL BE THE POLICY OF THE CITY OF LANCASTER TO:

Source and Operational Controls

1. Encourage and enforce State noise abatement requirements on all vehicles and stationary sources.

2. Restrict commercial trucks to designated high-use corridors, excepting those necessary to carry out local construction and deliveries.

3. Encourage the Southern Pacific Transportation Company to maintain railway lines properly and establish operational restrictions in areas where adjacent uses would be adversely impacted.

4. Encourage the Air Force to continue to limit Plant 42 operations to 6:00 a.m. to 10:00 p.m. and pursue traffic pattern modification to reduce noise impacts on the City of Lancaster.

5. Isolate industries whose operations are characterized by high levels of noise from sensitive uses (residential, health care facilities, schools, places of public assembly, etc.) and require adequate buffering from other uses.

6. Encourage the California Department of Transportation to develop, in an expeditious manner and in accordance with Federal and State mandates, a noise attenuation buffer along sections of the Antelope Valley Freeway which are at grade or elevated.

7. Encourage the Southern Pacific Transportation Company to develop a noise attenuation buffer along its corridor.

Land Use and Development Controls

1. Require that in areas exceeding an L_{dn} of 65 dB(A):

   a. Limit residential development to one unit per existing parcel cut or one acre, whichever is smaller, unless:

      (1) A noise attenuation buffer (concrete block wall, berm, etc.) is constructed which reduces the noise level impacting the site below an L_{dn} of 65 dB(A), or;

      (2) dwelling units can be sited outside of the L_{dn} of 65 dB(A) contour.

   b. Exclude all critical noise-sensitive uses (e.g., schools, health care facilities).

   c. Classify as a "Noise Impact Management Area".

2. Utilize maximum anticipated, or "worst case", noise conditions as the basis for land use and development controls, as a means to prevent future incompatibilities.

3. Develop a City noise ordinance that includes noise level limits for residential, commercial, and industrial land uses; for construction activities; and for motor vehicles operating within the City.

Coordination, Support and Monitoring Activities

1. Update noise standards and criteria as knowledge in the field of noise expands and new insights into its effects on urban and rural life are gleaned.

2. Establish a periodic noise monitoring program to measure changes in ambient noise levels as a means to evaluate the effectiveness of source controls and impacts on urban and rural uses.

3. Monitor factors influencing the year 2000, or "worst case", noise exposure levels and, as significant changes occur (e.g., traffic volumes and routing, flight operations, railroad use, technology, rate of development), prepare revised noise contours. As

noise contours shift, appropriate land use and development controls shall be applied to newly impacted areas.

4. Coordinate with the California Department of Transportation and Federal and local transportation agencies in developing overall noise mitigation programs.

5. Reduce the future impact of excessive noise from all major sources by the judicious use of technology, planning and regulatory measures.

6. Encourage the City of Los Angeles Department of Airports to use a noise monitoring system at Palmdale International Airport and U.S. Air Force at Plant 42 to document noise generated from aircraft operations and detect changes over time.

7. Solicit funds from appropriate levels of government to underwrite the costs of noise abatement programs.

8. Initiate a site-specific noise analysis of the areas exposed to noise levels exceeding an L_{dn} of 65 dB(A) attributable to U.S. Air Force Plant 42 to determine the validity of the A.1.C.U.2. study.

6.3 Guidelines for Implementation

6.3.1 Criteria and Standards

The development of noise and zoning ordinances require specified criteria and standards. Table 5.7 lists the recommended maximum exterior noise limits that should be permitted for residential, commercial, and industrial areas. These recommended levels assume that any intruding noise above these limits would be fairly continuous in nature and have no unusual characteristics. If the intruding noise has unusual characteristics, corrections to the noise levels may be applied (Office of Noise Control, April, 1977). The levels listed are based on criteria for quiet, suburban areas (ONC, April, 1977).

Table 5.8 lists maximum allowable noise levels for a variety of construction equipment. These criteria are taken from the General Services Administration Purchasing Specifications. Acoustical enclosures may be used for stationary equipment to meet the specifications.

Noise level limits for motor vehicles are given in Table 5.9 based on the California Vehicle Code. These limits are enforceable by any peace officer of any jurisdiction.

Recommended capability criteria for a broad range of land use categories are given in Figure 3. The acceptability criteria of Figure 3 were based on the following factors:

(1) Speech communication needs;

(2) subjective judgments of noise acceptability and relative noisiness;

(3) need for freedom from noise intrusions;

(4) sleep sensitivity criteria;

(5) accumulated case histories of noise complaints, predominantly near civil and military airports; and

(6) typical noise insulation provided by common types of building construction.

TABLE 5.7

MAXIMUM EXTERIOR NOISE LIMITS[2]
(Levels not to be exceeded more than 30 minutes in any hour)

Land Use	*Median A-Weighted Level (L_{50}) at Property Line in dB*	
	Daytime	*Nighttime*
One and two family residential	50[2]	45
Multi-family residential and public areas	50[2]	50
Commercial	65	60
Light industrial	70	70
Heavy industrial	75	75

[1] Adapted from "Model Community Noise Control Ordinance", Office of Noise Control, California Department of Health, April, 1977. See reference for noise level adjustments for noise intrusions which are not continuous or which have unusual characteristics.

[2] As recommended by the County of Los Angeles, Department of Health Services, letter of 3 March 1980.

TABLE 5.8

MAXIMUM NOISE LEVELS FOR CONSTRUCTION EQUIPMENT[1]

Equipment	*Maximum A-Weighted Level at 50 Feet in dB*
Earthmoving	
front loader	75
backhoes	75
dozers	75
tractors	75
scrapers	80
graders	75
truck	75
paver	80
Materials Handling	
concrete mixer	75
concrete pump	75
crane	75
derrick	75
Stationary	
pumps	75
generators	75
compressors	75
Impact	
pile drivers	95
jack hammers	75
rock drills	80
pneumatic tools	80
Other	
saws	75
vibrators	75

[1]Guide Specifications, Public Building Service 4-01100, paragraph 44.8, General Services Administration.

TABLE 5.9

MAXIMUM NOISE LEVELS FOR MOTOR VEHICLES[1]

a. Measured at 50 feet, any time and any condition:

	Speed Limit of 35 mph or Less	Speed Limit of More Than 35 mph
Any motor vehicle with a manufacturer's gross vehicle weight rating of more than 10,000 pounds and any combination of vehicles towed by such motor vehicle..................	86 dBA	90 dBA
	Speed Limit of 45 mph or Less	Speed Limit of More Than 45 mph
Any motorcycle other than a motor-driven cycle.........................	82 dBA	86 dBA
Any other motor vehicle and any combination of vehicles towed by such motor vehicle..................	76 dBA	82 dBA

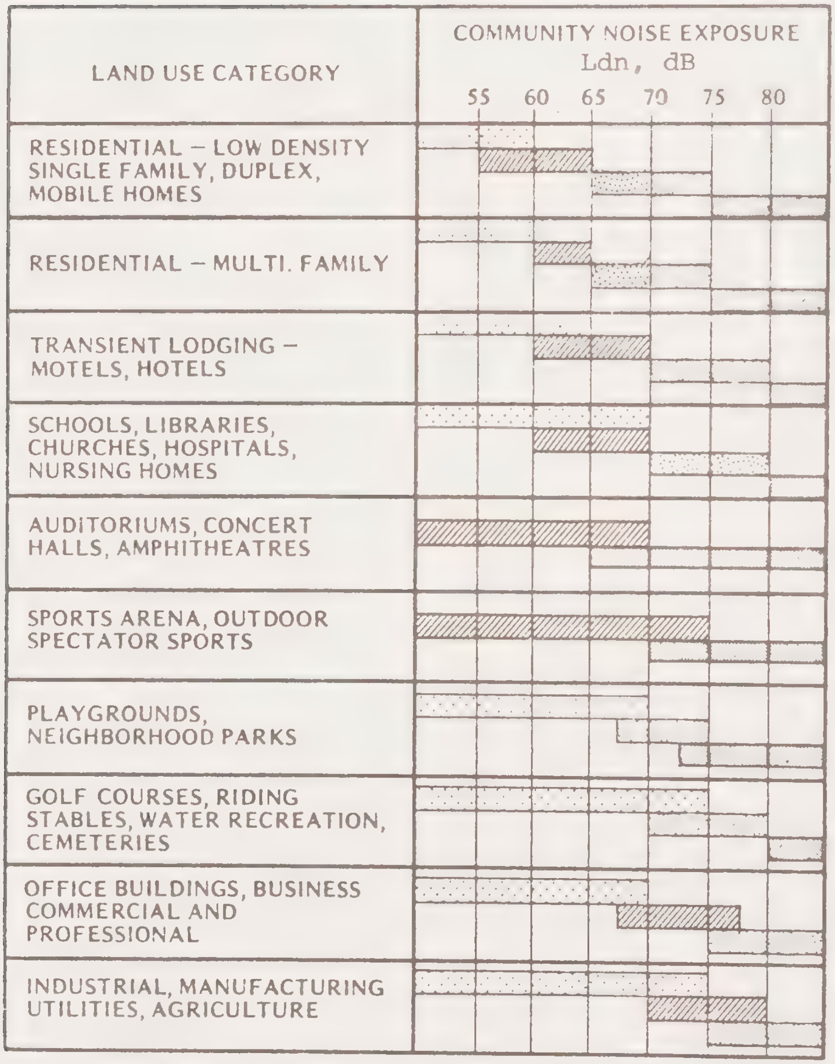
b. Measured at 50 feet within a speed zone of 35 miles per hour or less on level streets:

Any motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more and any combination of vehicles towed by such motor vehicle................	82 dBA
Any motorcycle other than a motor-driven cycle................	77 dBA
Any other motor vehicle and any combination of vehicles towed by such motor vehicle..................................	74 dBA

[1]California Vehicle Code, Sections 23130 and 23130.5.

FIGURE 3

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

6.3.2 Program Costs and Revenue

The programs to implement the policies will require an economic effort by the City of Lancaster, particularly the development of a noise ordinance and revisions to building, subdivision, and zoning ordinances. Monitoring equipment and personnel costs will vary depending on specific problems and needs. Major costs may result from implementation of the policies to abate noise in existing problem areas.

A small amount of revenue can be expected, resulting from fines due to violations of new noise regulations. Some income can also be anticipated from fees charged for procurement of permits that will be required as a result of new regulations.

There are a variety of Federal assistance programs available to the City for implementing noise control strategies in the planning area. Generally, these programs fall into two major categories: programs related to specific facilities or noise sources, such as airport, highway, or mass transit planning programs; and programs related to land use, such as planning and economic development assistance, and urban renewal and development programs.

Information about these various programs may come from several sources. In particular, the notification and Review Procedure established by the Office of Management and Budget Circular A-95 provides a means of coordinating programs between agencies. Planning agencies are informed of projects involving Federal funding that are being considered by other agencies while plans are still in the early stages. Thus, they can choose to coordinate activities. Another important tool for the planner is the environmental impact statement, required by the Environmental Policy Act of 1969, for all actions by Federal agencies with significant effect on the environment.

Federal programs related to noise abatement are summarized in Appendix I . The appendix includes information on eligibility requirements for assistance, form of assistance, and planning work phase in which the program is important.

Part 2

Noise Element Technical Report

1.0 Introduction

The purpose of this portion of the Noise Element is to provide the ncessary technical back-up to the Policy Report. The technical nature of some of the information contained in this section necessitates a scientific discussion. However, because of the diverse audience of the Noise Element, the approach has been to minimize the use of detailed mathematical presentations and scientific terminology. Rather, this Report relies for the most part on qualitative descriptions of methodology and noise exposure.

Those wishing a more detailed discussion of noise evaluation techniques are referred to the works listed in the References Section.

2.0 Introduction to Noise

2.1 General Description of Noise

2.1.1 Sound Mechanics

Fundamental to any discussion of environmental noise is an understanding of sound phenomena. Such an understanding is interdisciplinary in that the generation of sound waves is within the traditional domain of physics while the perception of sound is primarily a concern of physiology and psychology. In this section, the emphasis is on the source of sound waves. The next section deals with the reception of sound, and is followed by a discussion of sounds that are defined as noise in the Element.

Sound can be defined as a mechanical form of radiant energy which is transmitted by longitudinal pressure waves in air or another medium. To illustrate this definition, consider a tuning fork in vibration after being struck. As a tong of the fork moves in one direction, it compresses the air particles in its path producing an area of condensation. As the tong reverses direction, the air particles left in its wake spread out resulting in a partial vacuum or rarefaction of the air. These alternating sequences of condensation and rarefaction disperse from the tuning fork in a form of wave motion (Figure 4).

In the above example, air was the "medium" through which sound was transmitted. Sound may also be transmitted through liquids such as the clanking of a diving board heard under water in a swimming pool. Solids also transmit sound as evidenced by built-in dishwashers in apartment buildings. This example also shows that solids transmit vibrations that can be felt as well as heard.

Sound waves have two major dimensions: frequency (or pitch) and amplitude (loudness or intensity). Frequency is determined by the number of fluctuations or sound waves that occur in one second (Figure 2.1). This measure is termed "cycles per second" or "Hertz" (abbreviated Hz). Generally, people can hear sounds with frequencies from about 16 to 20,000 Hz. Sound waves below 16 Hz are referred to as infrasonics and cannot be heard, while ultrasonics are sounds above 20,000 Hz that cannot be heard.

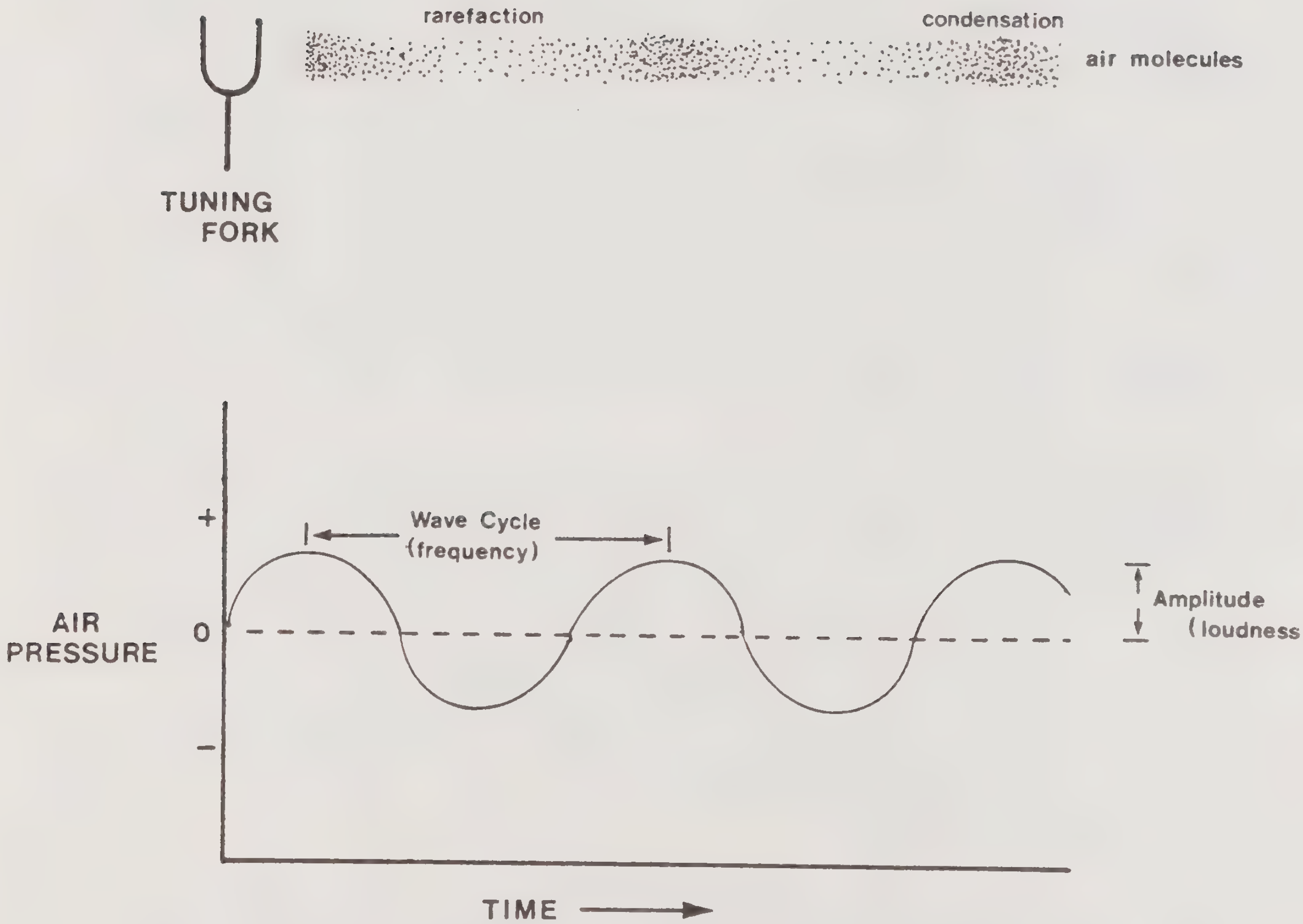


FIGURE 4. Diagram of simple sound waves.

Amplitude is the difference in air pressure between normal air pressure and a condensation or rarefaction area and can be measured as the height or depth of a sound wave from the median line (Figure 4). The greater the pressure is, the louder the sound. Several schemes are used for measuring amplitude including measurement of sound pressure in microbars, the energy of the pressure as sound power, the perceived difference between two sounds by humans (loudness), and the decibel system (dB). The preferred decibel system is a relative logarithmic scale developed to express the wide ranges of sound pressure and sound power (Table 5.10) and based on human hearing. The basic reference point for the decibel scale is the weakest sound a young person with excellent hearing can detect in a quiet place (assigned a value of 0 dB, it is equivalent to a sound pressure of 2×10^{-4} microbars or 20 $\mu N/m^2$). An important aspect of this logarithmic scale is that it does not progress arithmetically or linearly. That is, while a 10 dB sound is ten times the amplitude or intensity of a 0 dB sound, 20 dB is 100 times as intense as 0 dB (rather than 20 times), and 30 dB is 1000 times as intense as 0 dB (rather than 30 times).

Another important feature of the decibel scale is that sound levels are not directly combined when they are added. For example, if one truck emits 65 dB while idling, parking another truck producing 65 dB next to it does not generate a total noise level of 130 dB. Rather, the total noise level would by 68 dB. The basis of this is the logarithmic nature of the decibel scale, and it is an important feature to remember when considering an area exposed to more than one source of noise. A convenient graphic method for combining decibels is provided in Figure 5.

2.1.2 Perception of Sound

People perceive sound because fluctuations in pressure of a transmitting medium set up a corresponding vibration in their eardrums, that are then transferred and interpreted by the brain as sound. The human ear can detect very small pressure differences (2×10^{-4} microbars, Table 5.10) and yet also withstand up to 200 microbars of pressure without experiencing discomfort (a millionfold increase in pressure). While people are sensitive to this wide range of sound levels and hear frequencies from 20 to 20,000 Hz, it takes much more than twice a reference sound energy level for people in general to perceive a doubling in loudness. The average person can

TABLE 5.10 SOUND LEVELS AND HUMAN RESPONSE

Sound Power, watts/m^2	Sound Pressure, Microbars	Sound Level, dB(A)	Example	Human Response	Relative Loudness (Approximate)
1×10^{3}		150	Carrier Deck Jet Operation		32,768
100	2×10^{4}	140		Initial Pain Threshold	16,384
10		130			8,192
1	2×10^{2}	120	Jet Takeoff (200')	Initial Discomfort Maximum Vocal Effort	4,096
0.1		110			2,048
0.01	20	100	Jet Flyover (1000')		1,024
1×10^{-3}		90	Heavy Truck	Very Annoying, Hearing Damage after 8 hours	512
1×10^{-4}	2	80	Alarm Clock	Annoying	256
1×10^{-5}		70	Freeway Traffic at 50'	Telephone Use Difficult	128
1×10^{-6}	0.2	60	Conversation		64
1×10^{-7}		50	Light Auto Traffic at 100'		32
1×10^{-8}	0.02	40	Library	Quiet	16
1×10^{-9}		30	Whisper	Very Quiet	8
1×10^{-10}	2×10^{-3}	20	Broadcasting Studio		4
1×10^{-11}		10		Just Audible	2
1×10^{-12}	2×10^{-4}	0		Threshold of Hearing	1

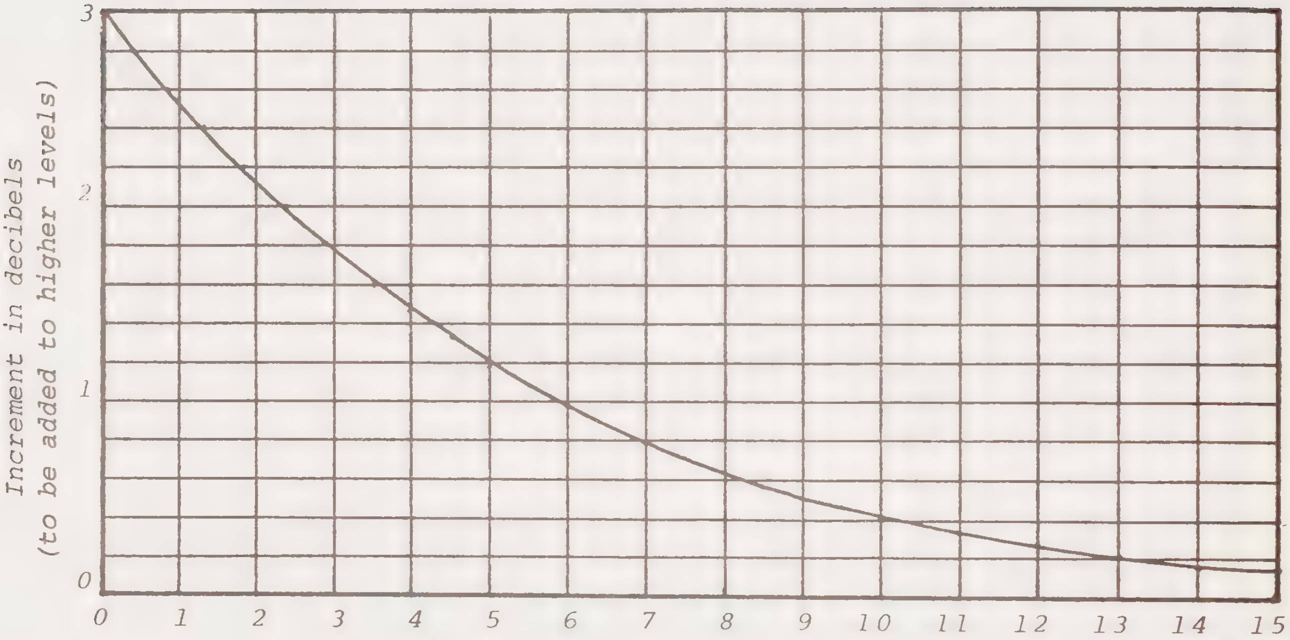


FIGURE 5 Chart for combining sound levels by "decibel addition".

Example: Add 50 and 56 dB. Since the difference between the two levels is 6, enter at 6 on the horizontal axis. Read up to the curve and read left to 1. Add 1 dB to the higher level, 56, to yield the answer, 57 dB.

detect a difference in sound level at 2 dB, but laboratory hearing tests indicate that it takes about a 10 decibel increase for most people to perceive a doubling of loudness. Field experimentation with aircraft noise indicates that the doubling of loudness can be perceived over a wide range, but the 10 dB increase per doubling of loudness is an accepted rule of thumb.

It is important to note that the ear has not evolved involuntary response mechanisms to protect it from very loud noises without temporary or permanent loss of hearing acuity. This contrasts with the eye, which has evolved the dilation mechanism to protect it from over-stimulation by light. It is thought that an analogous mechanism to dilation has not developed in the ear because the environmental stimulus, i.e., frequent exposure to loud noise, has not been present. Whether existing levels of noise in large cities is sufficient to initiate natural selection processes is difficult to say, but in any event such adaption in man would take a long time. The human ear, then, is not well adapted to high levels of noise. This highlights the need to control loud noise before it reaches the ear.

Another important aspect of hearing is that the ear does not perceive all frequencies of sound equally. Generally, people are more sensitive to sounds in the higher frequencies than lower frequencies. This means that it takes a greater magnitude low frequency sound to be perceived as equal in loudness to a high frequency sound. This fact is accommodated in noise measurement by the use of an electronic filter in sound level meters that enables a meter to approximate the response of the human ear. Such measures are made by using the A scale of a meter, and are denoted by the letter A in the abbreviation dBA. Other measurement scales are the B and C scales which discriminate less against the lower frequencies, and therefore show somewhat higher decibel readings than the A scale (Figure 6).

2.1.3 Noise

At what point does sound become noise? The answer to this question is difficult primarily because of the subjective nature of noise. The American National Standards Institute (ANSI) defines noise as (1) any erratic, intermittent, or statistically random oscillation, or (2) any unwanted sound. It is the definition of noise as unwanted sound that causes difficulty in specifying what is noise and what is not. A common example of the difficulty is music. What may be rock and roll music to some is noise

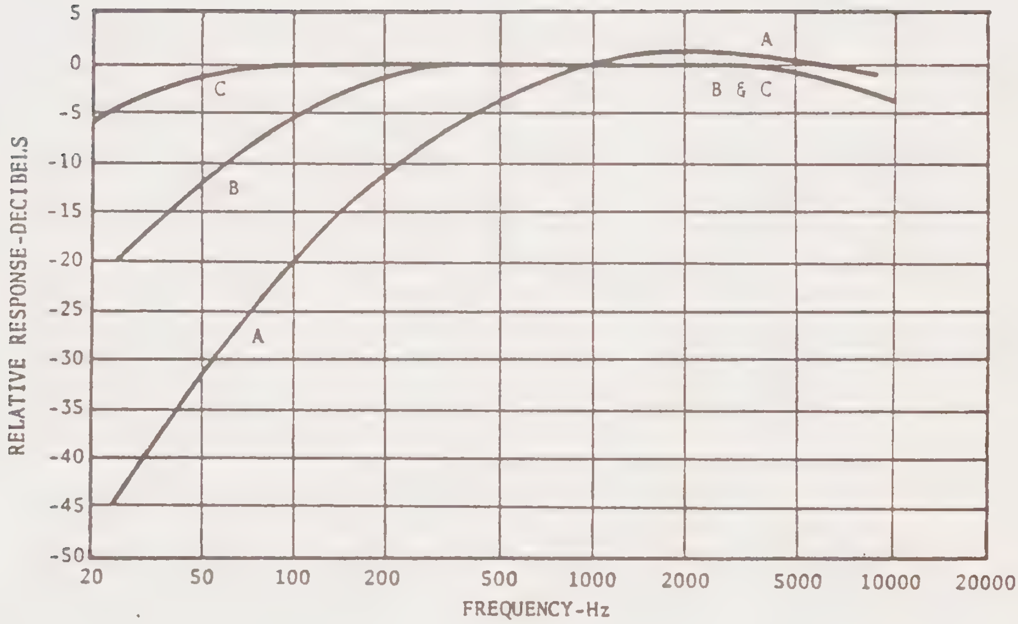


FIGURE 6 Frequency-response characteristics in the American National Standard Specification for A, B, and C scales in sound level meters.

SOURCE: Peterson, 1972.

to others. Resolution of this problem at the community level requires a large measure of public participation in defining "acceptable sound."

a. Noise Element

The sources of noise may be thought of as either indoor or outdoor sources. Indoor noise includes all of those devices and machines in the homes, offices, and factories that can create sounds loud enough to damage hearing, interfere with speech communication, and arouse a person from sleep. The concern of this Element, however, is outdoor noise. While both indoor and outdoor noise sources are regulated at the Federal level by the EPA and the Occupational Health and Safety Administration, control of outdoor noise is also a function of local government.

Outdoor noise can be considered in five categories: transportation, construction work, industrial operations, the individual human being (shouting, playing radio too loudly), and miscellaneous noise such as air conditioning units attached to windows or the banging of garbage cans and lids. Of these different categories, noise generated by transportation is the most serious. Transportation accounts for the most continuous, and in many areas, the loudest noise in urban centers. The emphasis of this Element is on evaluating and planning for transportation noise. Transporation noise sources are considered in this report in three categories: road, rail, and air.

b. Road Traffic Noise

In the City of Lancaster, road traffic noise is an important source due to its pervasiveness throughout the City. Roadways are often the most important noise source to local areas because of the continual daily activity of this source.

Road traffic noise is generally dominated by emmissions from automobiles and heavy diesel trucks. There are five other categories of vehicular noise sources: motorcycles, sport cars, light trucks, large gasoline-engine trucks and buses. Generally, motorcycles and sport cars are noisier than automobiles because of higher engine speeds and less adequate muffling. Light trucks emit noise levels that are similar to automobiles, while the larger gasoline-fueled trucks are noisier than cars but quieter than diesel-fueled trucks of equal size. Buses are much noisier than automobiles on City streets, but are quieter than diesel trucks on the highway because they are usually

better muffled and maintained. As a group, these five types of vehicles normally comprise only a small percentage of the total daily traffic flow. Since their noise emissions are within the range defined by auto and truck emissions, their noise is generally assumed to be contained within the mix generated by cars and trucks.

The principal components of both automobile and truck noise are three: the engine, exhaust and tires. Fans operating as part of the cooling system are a major contribution to engine noise; hot gases escaping out of the exhaust pipe create noise in that area of the vehicle; and the escape of air from between tire treads and the road surface is the source of tire noise. Four major factors control the noise level of vehicles: speed, acceleration, road grade and road surface. Generally, vehicular noise levels increase directly with increases in speed, acceleration, road grade and with rougher road surfaces. Figures 7 and 8 show the generalized noise spectra of an auto and a truck operating on level, average road surfaces at highway speeds.

c. <u>Rail Traffic Noise</u>

The Southern Pacific Transportation Company railway line paralleling Sierra Highway is part of the major north-south route for the Pacific Coast. While passenger service is no longer available on this route, it serves as one of the major freightlines in the State with an average of 20 freight trains per day, ranging from 18 to 28 freight operations during a day.

Noise produced by rail traffic in the City consists of events which are widely separated in time, but which are intense. Unlike road traffic, train noise is not considered as continuous. When a train passes through, however, it produces a very intense noise, often exceeding 100 dB (at 100 feet from the track centerline). The two major components of rail traffic noise are locomotive noise and passenger or freight car noise.

The locomotive produces the most intense noise which is generally thought to be a function of speed and track bed gradient. The relationship between speed and noise output is less well established, however, than the relationship between grade and noise output. Locomotives pulling upgrade generate significantly more noise than those operating under level or downgrade conditions.

In contrast, car noise is dependent upon velocity and increases directly with increases in speed. The wheel-

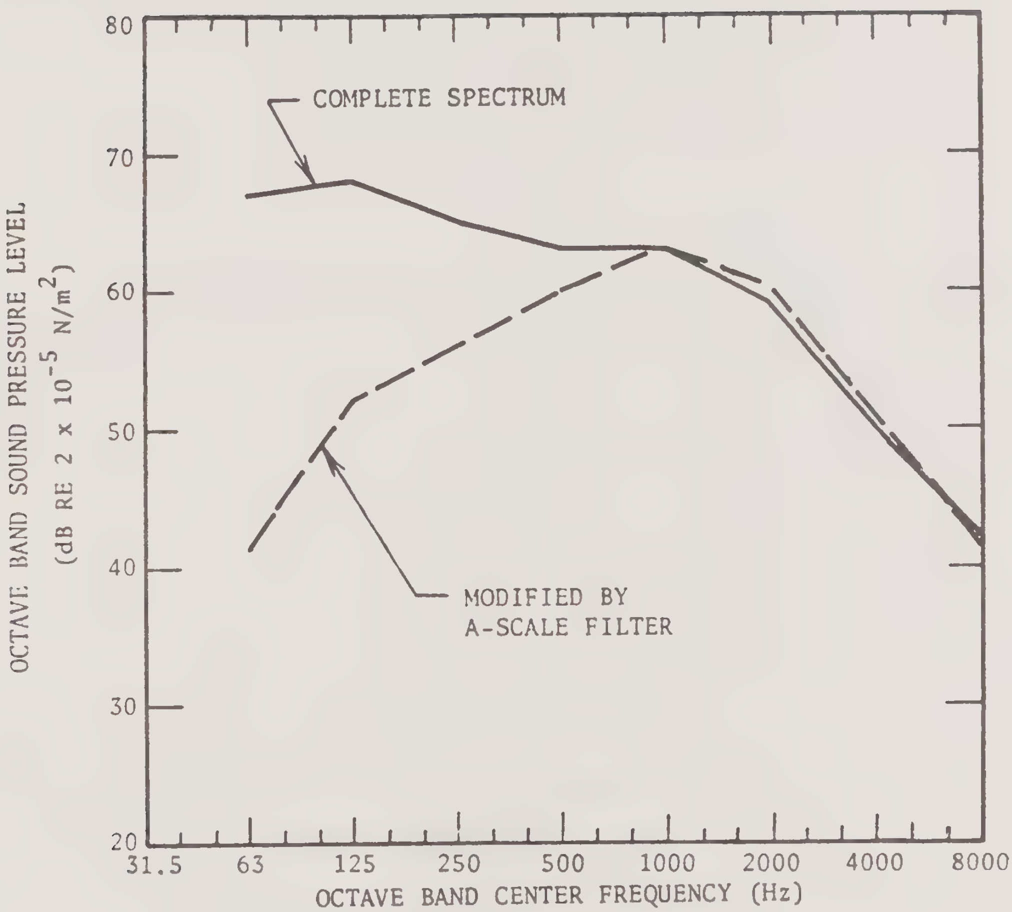


FIGURE 7 Generalized spectrum of typical passenger automobile at 50 mph speed and at 50 ft. distance. (Source: Bolt, Beranek, and Newman, Inc., 1973)

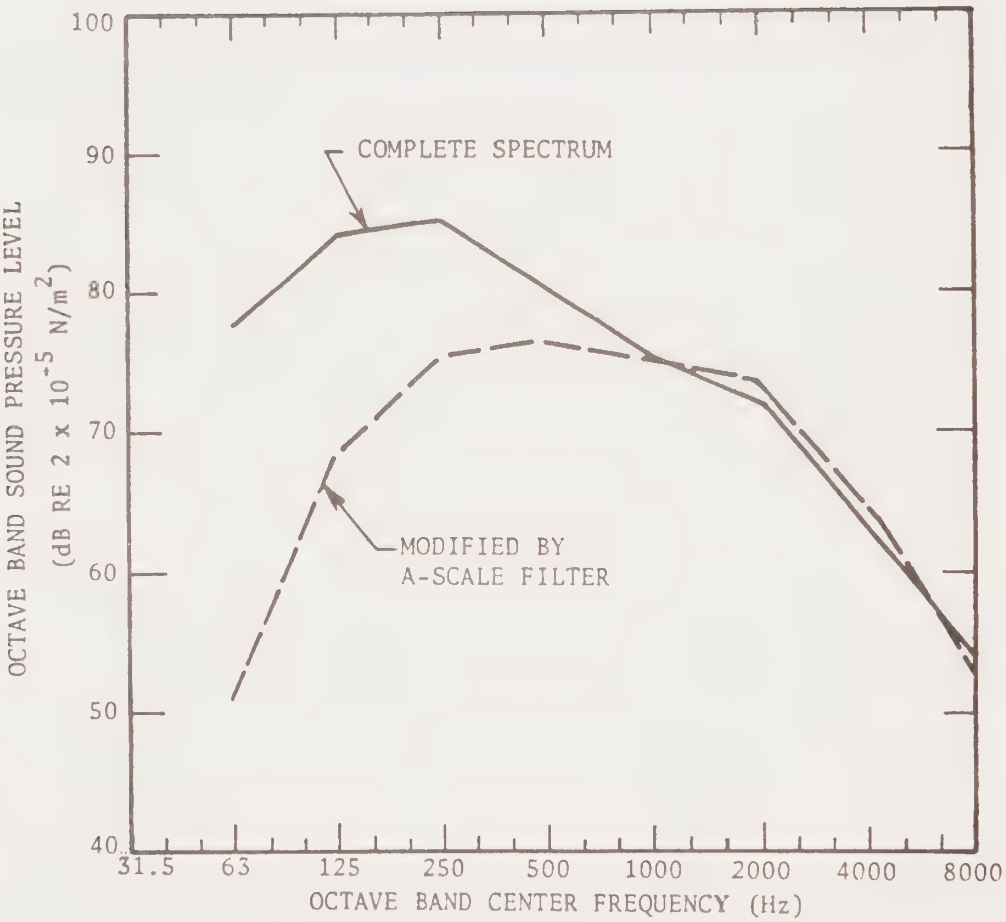


FIGURE 8 Generalized spectrum of typical diesel truck at 50 ft. distance on level roadway at highway cruising speeds. (Source: Bolt, Beranek, and Newman, Inc., 1973)

track interaction is also a primary factor in noise output. Jointed track, frogs and grade crossings, and tight radius curves all act to increase the noise output of rail cars. Figure 9 shows an idealized noise history for a train-passby illustrating the locomotive and car components of train noise.

d. Air Traffic Noise

The type of noise generated by aircraft is directly related to the type of propulsion system used in the aircraft. Air Force Plant 42 is currently the major airport used near the City with a variety of aircraft flown at the airport, ranging from piston-powered propeller aircraft to military jet fighters.

The majority of aircraft operations at AFP 42 are jets, which produce noise primarily from high velocity exhaust and compressor machinery. In propeller aircraft, the major noise sources are the engine exhaust and the propeller, which causes a buzzing noise as it rotates through the air. The frequency, magnitude and duration of aircraft noise events depend on aircraft type, engine type, power setting, and the various phases of flight.

A computer simulation model developed by Bolt Beranek and Newman, Inc. in conjunction with the Air Force Aerospace Medical Research Laboratory was used to estimate Ldn noise contour levels emitted from the AFP 42 (AICUZ, May 1976, updated 8 May 1978). Data describing flight tracks, flight profiles, power settings, flight path and profile utilization, and ground run-up information by type aircraft/engine were used to form a standard source model that is then corrected for local conditions. A revised noise contour map (31 August 1979) was obtained from the Air Force, and then combined with rail and road traffic noise to create the current noise contour map for the City of Lancaster (Plate I).

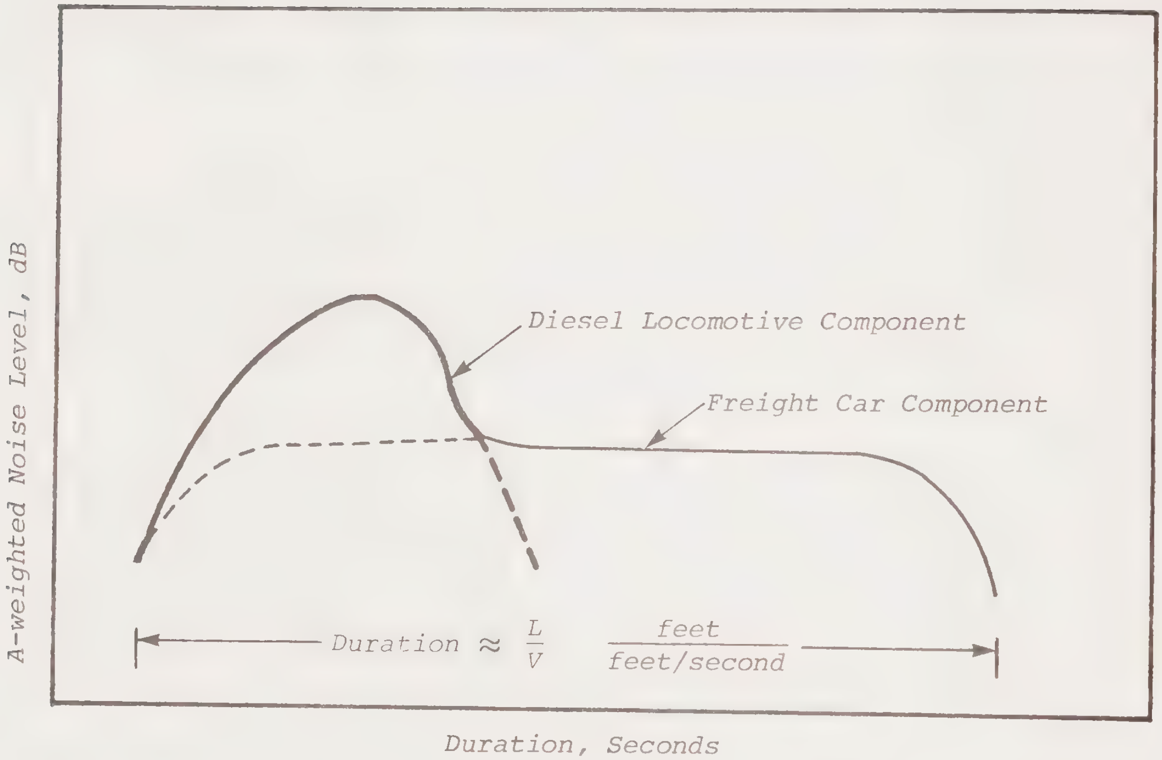


FIGURE 9 Idealized time history of train passby illustrating locomotive and freight car components.

SOURCE: Wyle Laboratories, 1973.

2.2 Effects of Noise

Noise affects man and his environment in a number of important ways. Some sounds cannot be heard or are not noticed, yet the human body reacts involuntarily to them. Other sounds are intense and quick enough to rupture the eardrum. However, all sound is not destructive. The point should be emphasized that sound is vital to communication and necessary for the maintenance of life.

As sound levels increase, they quickly reach levels which can be detrimental to health and well-being. However, like most human characteristics such as eye color and vision, acute hearing ability is distributed "normally" in a population. That is, there are a few people with extremely sensitive hearing, and a few people with extremely sensitive hearing, and a few people with extremely poor hearing ability. Most people, however, have hearing abilities between these extremes. This is an important concept to remember while reading the following sections on the effects of noise. Not all people are subject to experiencing these effects to the same degree. In short, the effects of noise are subjective, and this has an important bearing on regulatory schemes enacted by governments which set noise standards.

The effects of noise may be thought of as falling into four overlapping categories: physical, psychological, social, and economic. As research in acoustics and human response to sound progresses, the effects of noise will be more completely defined. This discussion is intended to be a brief summary of existing knowledge.

2.2.1 Physical

The most serious physical effect of noise is damage to hearing, and the most tragic damage to hearing is a permanent shift in the hearing threshold (termed permanent threshold shift or PTS). Once the cells of the inner ear are ruptured or otherwise damaged, there is no known way to repair them as the cells do not regenerate. To persons intermittently exposed to high noise levels, the hearing threshold may be shifted temporarily (termed temporary threshold shift or TTS). Most of us have experienced TTS at sometime, for example, when a firecracker explodes or a loud, sharp noise occurs nearby. For awhile, we cannot hear sounds at lower intensities. While the ear eventually recovers from this kind of damage, TTS can be a significant problem to persons frequently exposed to noise.

Besides the physical effect on our hearing, noise can induce a number of other physiological reactions. In fact, environmental or community noise is of concern not so much because of its effects on hearing, but because of its non-auditory effects. Community noise, particularly in an area such as Lancaster, is usually not intense enough to affect hearing. Table 5.11 is a summary of the noise level criteria, based on hearing loss, established by the Walsh-Healey Public Contracts Act of 1969 and the Occupational Safety and Health Act of 1970 (OSHA). These criteria are intended to regulate noise levels in industrial settings where people are exposed on a daily basis over a lifetime. To experience the 90 dBA criterion from road traffic, a person would have to stand 10 to 20 feet from a highway carrying about 1000 trucks per hour. To meet the OSHA criteria, the person would have to remain there 8 hours a day for a period of at least several years. Such a situation is highly improbable (even with the expected 5 dBA reduction in the OSHA criteria) and indicates that few, if any, people in the City of Lancaster are exposed to noise levels from transportation sources that can significantly damage hearing.

Perhaps the most important effects of community noise, then, are its effects related to stress. Noise is one of the principal urban stresses experienced daily by urban dwellers. The body interprets noise as a form of stress and reacts accordingly. Most of the responses are automatically produced by the involuntary nervous system. The individual may not be consciously aware that his body is under stress, and that nervous reactions are occurring. Furthermore, the individual may not be aware that noise is the source of stress even if he was aware of the stress in the first place. Reactions to noise are similar to reactions to intense emotional states such as fear or anger. Some of the responses are (1) an increase in blood pressure, (2) an increase in heart rate, (3) dilation of the pupils, (4) increase in blood cholesterol, (5) increase in hormone levels by endocrine glands, (6) change in the rate of acid secretion by the stomach, (7) increase in sweat gland activity, and (8) increase in respiration. The responses can lead to increases in heart disease, ulcers, tension, hypertension, and allergic reactions. It has been documented that noise affects us even in the womb before birth. Even relatively low levels of noise in the mother's environment can cause the fetus' heart rate to increase significantly. Other research concludes that very loud noises can possibly be as much a cause of congenital malformations as thalidomide

TABLE 5.11

HEARING DAMAGE RISK CRITERIA

Duration per day, hours	*Sound level, dBA*
8	90
6	92
4	92
3	97
2	100
1-1/2	102
1	105
1/2	110
1/4 or less	115

Source: Walsh-Healey Public Contracts Act of 1969.

or German measles. On a less serious level, noise can be responsible for the headaches and daily fatigue common in urban areas. Noise may affect our health adversely only if we are exposed to high levels for long periods of time, but it can impair our well-being through the kind of effects listed above at levels commonly experienced in urban areas.

The effects of noise discussed above are produced by sounds in the audible frequency range. Mention should also be made of two categories of sound which cannot be heard - "ultrasonics" and "infrasonics". Ultrasonics refers to the range of sounds above 20,000 Hz or wave cycles per second, the upper limit of human hearing. A dog whistle is a common example of a device which produces ultrasonic frequencies. Infrasonics, on the other hand, refers to frequencies below the audible range, that is, below 16 Hz.

For years, ultrasound has been used in medicine to treat asthma, cystic fibrosis, and other respiratory ailments, and in a variety of ways to clean small instruments, jewelry, tools, dentures, etc. Useful and common as ultrasound is, it is known to be hazardous if improperly applied. It specifically should not be directed at areas of poor blood circulation or cancerous infection. The presence of ultrasound in the ambient urban atmosphere is generally insignificant compared to audible frequencies, but it should be noted a a potential health hazard.

Infrasound is less familiar to most people, and research into the world of infrasonics is relatively recent. These low frequency pressure waves seem mostly to act on the internal organs - the heart, lungs, and viscera by vibrating them. The organs are rubbed together by a kind of resonance creating dizziness, nervous fatigue, and seasickness. A frequency of 7 Hz has been found to be fatal at high enough intensities. Infrasound has been measured in the everyday ambient atmosphere in Washington, D.C. Some of the sources were identified as large scale natural events such as tornadoes in Oklahoma, an earthquake in Montana, and magnetic storms in the upper atmosphere. A large number of sources remain unidentified, however. One common source of infrasound are large industrial ventilation systems. More so than ultrasound, infrasound can be considered part of the urban environment.

Noise also affects the physical environment of the City. The example of high pitched sound resonating and shattering glass is common. Structural damage by noise is usually moderate, however, even in sonic booms. Glass and plastic

are generally the materials most susceptible to damage by noise. Others include base coats of paint, finish coats, stucco, wallboards, interior tiles, brick, concrete blocks, and organic adhesives. Temporary vibrations may be induced in various kinds of structures, particularly buildings, by noise as well. Structural response to sound is highly variable, however, and most damage is usually concentrated in secondary structures such as glass or plaster.

2.2.2 Psychological

It is difficult to distinguish between physical and psychological effects of noise. Many of the behavioral responses to noise are rooted in the involuntary physiological reactions. The two most serious psychological effects of noise are interference with sleep and speech. Data on interference with sleep shows that this response is more subjective than interference with speech, but generally noise levels will begin to interrupt or impair sleep in the 40 to 45 dBA range (Figure 10). Noise acts on the body when it is asleep in the same manner as it does when the person is awake. The ear does not mask noise during sleep. Even if noise levels do not awaken a person, they can interfere with dream stages shifting a person from a deeper dream stage to a shallower one. Any disruption of deep stage dreaming is thought to impair mental health and well-being. Loss of sleep is known to impair a person's ability to carry on normal daily tasks, especially those requiring short term memory or high speed processing of information. Severe deprivation of sleep can create irascibility and mental disorganization causing dreaming while awake, hallucinations, and other behavior bordering on temporary mental illness. It is important to remember that noise can disturb the rest of sleeping persons whether they awaken and are aware of the noise or not.

Interference with speech depends on distance, the voice level, and other parameters. The understandable reception of voice sounds in ordinary conversation is usually interfered with at the level of 50 to 60 dBA (Figure 11). The social costs of interference with speech can be of great magnitude and are discussed below. The behavioral impacts of speech interference include impairment of leisure activities needed for stable human behavior, and irritability when conversations must stop until the noise decreases. Noise also interferes with concentration and the ability to perform tasks.

While it has never been proven that exposure to noise alone can cause mental illness or breakdown, it is true that

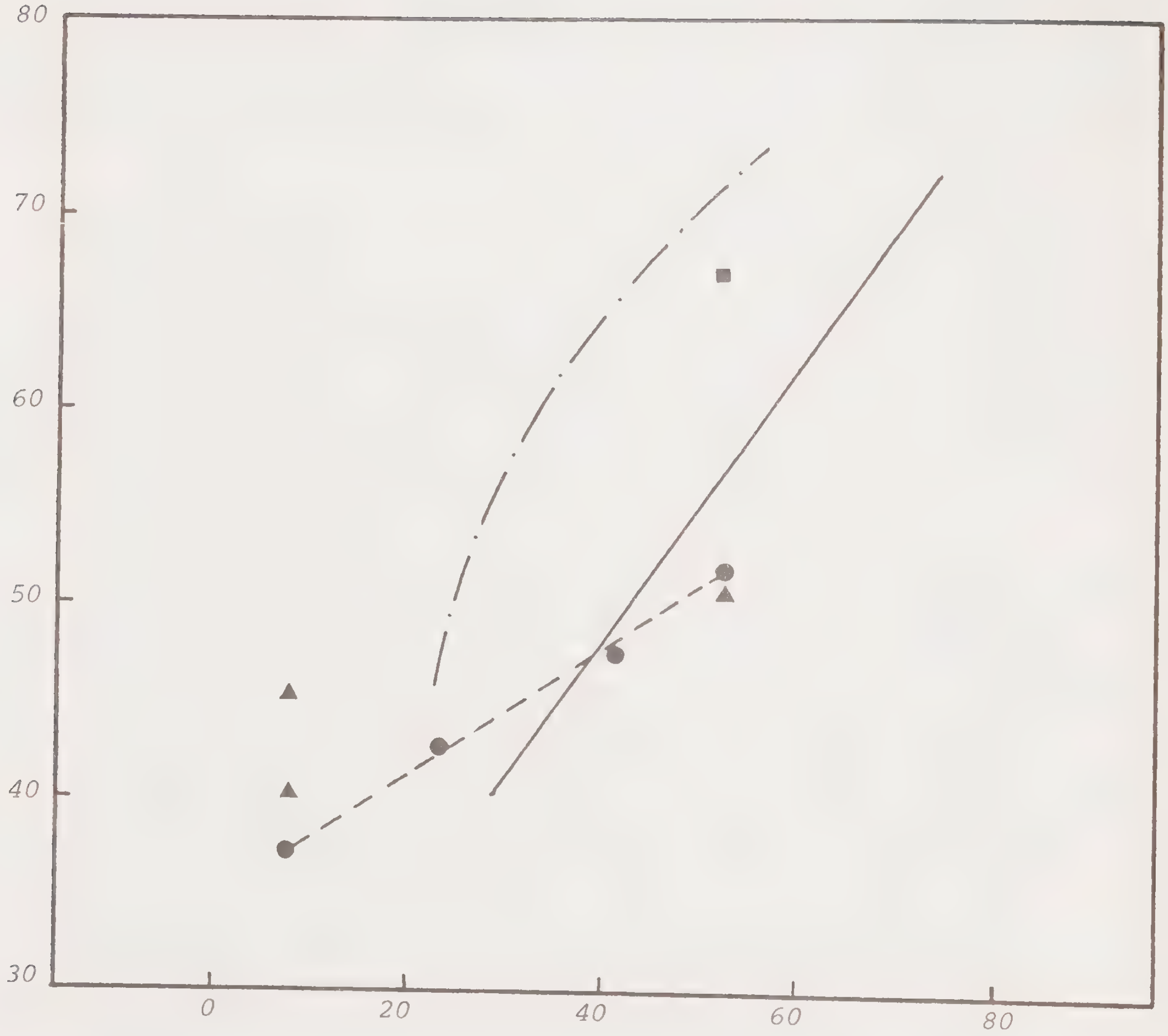


FIGURE 10 Noise-induced sleep disturbance data.

SOURCE: Wyle Laboratories, 1973, Noise Pollution: Hearings before the Subcommittee on Air and Water Pollution, Committee on Public Works, U.S. Senate, 92-H35.

EXPLANATION:

●— — —● *Laboratory experiment on subject awakenings.*

▲ *Laboratory experiment on change of sleep level.*

■ *Laboratory experiment subject awakenings.*

—·— *Field survey data. People reported being kept from going to sleep.*

—— *Field survey data. People reported beind awakened.*

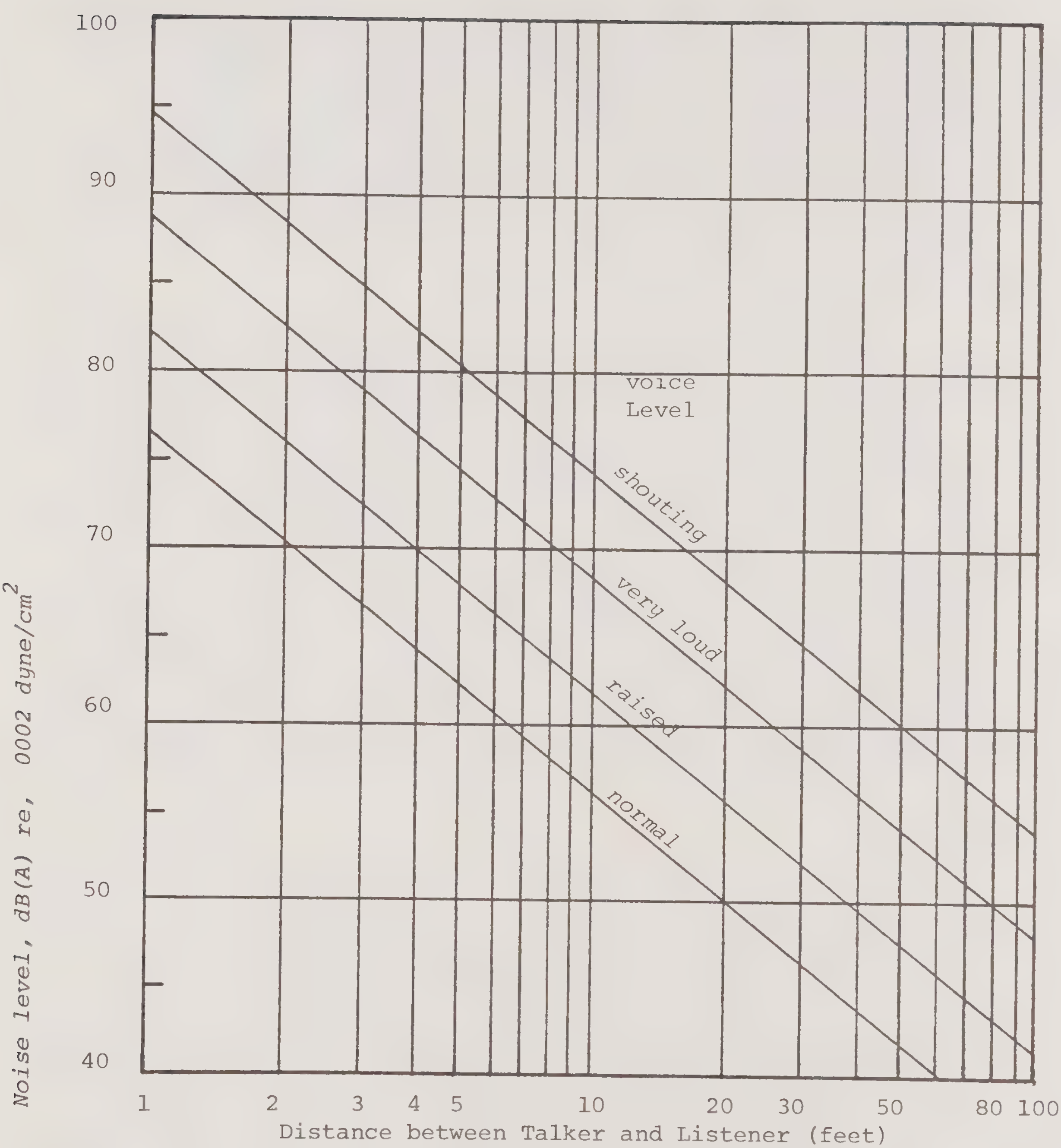


FIGURE 11 Noise levels which barely permit face-to-face conversation at the indicated distances.

SOURCE: Wyle Laboratories, 1973.

exposing a depressed individual to noise doesn't help. A famous English study reported in 1969 that individuals closely exposed to the noise of London's Heathrow Airport had higher admission rates to mental hospitals than people living farther from the noise. Such evidence is not entirely convincing, but does warrant further investigation. It is a good indication that noise, as an additional form of unwanted stress, can provide the increment to bring on emotional stress.

2.2.3 Social

The reactions of groups and communities to noise are similar to the reactions of individuals. It is clear that noise interferes with social processes. Its foremost effect is to disrupt the ability of people to communicate with one another. Communication by sound is vital to almost all human social behavior, and its impairment should not be underestimated. As an important example, consider educational processes. Children who attend school near sources of loud noise, such as Parkview School, can have their learning and socialization processes severely handicapped. Several schools in Westchester were forced to close down because the noise near the Los Angeles International Airport interfered so seriously with teaching. The effects of noise on other social processes such as marketing, recreation, and the practice of religion can be equally as serious.

2.2.4 Economic

Although the effects of noise are particularly apparent on human behavior and physiology, there is also evidence of negative impacts on the value of property. Noise of levels of over 60 dB have been found to significantly lower the value of property over a period of time. Deterioration of building due to poor maintenance practices was found to be significantly higher in areas subjected to 60 dB Ldn contours than in areas of lower noise intensity. There was also found to be higher vacancy rates in rental units and a significantly higher percentage of residents expressing a desire to sell their homes in the 60 dB Ldn noise zones.

One other kind of major economic cost of noise is noise-induced inefficiency in the labor force. As noted under psychological effects, noise interferes with the performance of tasks. Such interference causes business and industry to lose income through lost output. At the national level, such losses total millions of dollars daily. Occupational noise yearly results in hundreds

of millions of dollars of compensation claims, and the costs of insulating environments and muffling sources should be included as economic costs as well. Economic costs of noise are among the most difficult to calculate, however, because they are associated with the psychological states of stress discussed above.

3.0 Methodology

3.1 Philosophy of Analysis

When evaluating noise exposure, it is necessary to account for a number of diverse parameters. These include not only sound wave amplitude and frequencies, but also the time characteristics of the noise, reverberation and attenuation by structures and other barriers, the hearing ability of individuals exposed, and their activity during exposure. Such a description entails the use of several numerical indicators and would be specific to a particular site and situation. However, when evaluating noise exposure on a regional and community basis, such a complete description would be impractical. It is necessary, then, to choose a less detailed but reliable indicator of noise exposure and potential noise problems. This is the approach taken in this Noise Element.

The rating scheme used in this Element to describe transportation noise is the Day-Night Noise Level which results in a generalized single-number indicator of noise exposure. While the establishment of a completely valid single-number noise exposure index has been the goal of psychoacoustic experts for many years, no indicator has proven to be a fully adequate substitute for more complex descriptions. With that qualification in mind, it can be said that the single-number indices are useful tools in defining noise exposure for general planning purposes.

One other qualification regarding the noise exposures described in this report should also be noted. The noise levels were defined by use of mathematical models which rely heavily on the validity of the input data. In a number of instances, these data were incomplete or not available, and it was necessary to make reasonable estimates. In developing these estimates, a conservative approach was taken at each stage of data analysis. The end result of this process is that the noise exposures computed in this analysis may be somewhat high and could be considered to contain a "margin of safety". The intent of this approach is to ensure that any error introduced into the process is on the side of public benefit.

3.2 Measurement Scheme

3.2.1 L_{dn}

The Day-Night Noise Level system of forecasting noise exposure has been recommended as the uniformly accepted index by the EPA. This index is based on two premises regarding human response to sound. The first is that humans will respond to a steady noise over a given period of time in the same way that they will respond to a time-varying noise with an equivalent amount of sound energy as the steady noise. The second premise is that humans are generally more sensitive to noise during the night than during the day.

The dominant characteristic of transportation noise is that it is not steady. There are constant fluctuations which may or may not be widely separated in time. At any given moment near a freeway or rail line, it may be quiet, but when traffic volumes or speeds increase, that quiet is quickly displaced by high noise levels. Therefore, it is not appropriate to measure noise at any given moment, and call that the noise level of the source. A statistical approach is required to account for the time-varying nature of the sound. Such an approach, however, would yield a large number of statistics to show the day, night, weekday, weekend, fair and foul weather differences in noise levels. Such a large number of parameters make baseline noise level mapping and noise control enforcement extremely difficult, if not impossible, to accomplish on a community-wide basis.

The problem of time-fluctuating noise levels is further complicated by the fact that people are exposed to different sources of noise as they move from place to place in the community. For example, a typical factory worker spends time in a relatively quiet residential setting during the night, drives to work in high noise traffic, works around loud machinery all day, except for a quieter period at lunch, and then returns home. This pattern of exposure to different noise levels increases the number of descriptive parameters needed to evaluate the total noise "dosage" of people as they move through the day, and complicates the task of setting standards to protect health and welfare.

To avoid a large number of noise indices, it became necessary for acousticians to develop single-number indicators. As the basis of such indicators, it has been shown that humans respond to steady noises in generally the same way as to fluctuating noises with equal energy content. The

level of a constant sound which has the same sound energy as does a time-varying sound is termed the Equivalent Sound Level (abbreviated L_{eq}).

The L_{eq} concept was first introduced in Germany in 1965 to evaluate aircraft noise and has since received wide use in many countries. It has been adequately demonstrated that the L_{eq} can be used to describe the noise levels which cause annoyance and lead to permanent hearing loss.

The Day-Night Noise Level is based on the L_{eq} and the premise that noise at night is more annoying than daytime noise. This is primarily a reflection that most people sleep during the night. The L_{dn} uses the A-scale weighted L_{eq} as the basic expression of noise levels, over a 24-hour period, but applies a 10 dB penalty to the noise which occurs during the night hours (defined as 10:00 p.m. to 7:00 a.m.). This means that the method makes noise levels measured at night 10 dB higher than they actually are. The summary definition of L_{dn} is: The A-weighted average sound level in decibels during a 24-hour period with a 10 dB weighting applied to nighttime sound levels.

The considerations discussed above form the basis of the rationale for selecting the L_{dn} as the primary noise evaluation scheme for the Noise Element. In summary, the L_{dn} has the following desirable characteristics:

a. The L_{dn} utilizes A-scale measurements of noise corrected for time-variance and nighttime exposure, and, therefore, is a reliable single-number index of human response to noise.

b. The measure can be applied to any source of environmental noise, thereby providing a common scale to compare (and add) noise exposure from different sources.

c. The measure can be easily calculated from sound level meter recordings.

d. The measure can be used in predictive methodologies to estimate future noise levels.

3.2.2 CNEL

The L_{dn} represents an evolution of a noise measurement scheme called the Community Noise Equivalent Level (CNEL). The CNEL is virtually identical to the L_{dn}, but for one parameter. Rather than dividing the 24-hour day into two parts, the CNEL scheme adds a third period, the evening, which is defined as 7:00 p.m. to 10:00 p.m. Noise events during this evening period are assigned an additional 5 dB weighting.

CNEL and L_{dn} noise levels usually agree within plus or minus 1 dB for the same noise. The evening noise weighting has not been shown to yield a better indicator of human response to sound, and is considered an unnecessary complexity in the scheme. Therefore, it was dropped when the L_{dn} was developed. However, the CNEL scheme was used to compute noise exposures of aircraft in flight in the anlaysis done for the Draft Environmental Impact Statement for Palmdale International Airport (Department of Transportation, February, 1979). This analysis was conducted to meet the requirements of California Administration Code, Title 4, Sub-chapter 6, which mandates the use of the CNEL scheme in evaluating noise around airports.

It is important to remember for the purpose of this Noise Element that there is no significant difference between the L_{dn} and CNEL noise levels. They may be compared directly, and combined using "decibel addition" to estimate the total noise exposure of a site.

3.2.3 Direct Measurement

Noise levels at schools, hospitals, and convalescent homes were determined by direct measurement in accordance with the amended requirements for Noise Elements (Appendix D). Measurements were made with a Pulsar Instruments Model 40 Sound Level Meter. Sound levels at these sites are described in terms of statistical noise levels, termed L_{10}, L_{50}, and L_{90} sound levels. The L_{10} level is that level exceeded 10 percent of the measurement time period; the L_{50} level is the level exceeded 50 percent of the time; and the L_{90} is that level exceed 90 percent of the time. For example, the notation L_{10} = 68 dBA means that for six minutes of each hour, the noise level exceeds 68 decibels as measured on the A-scale of a sound level meter. An L_{50} = 55 dBA means that for 30 minutes of each hour, the noise level exceeds 55 decibels as measured on the A-scale of a sound level meter. When the L_{10} and L_{50} levels are identical, or nearly so, it is an indication that the sound level being measured is constant; that is, a sound whose intensity does not fluctuate widely with time.

3.3 Mathematical Modeling

3.3.1 General

Noise environments around roads and railroads were computed based on mathematical models developed by Wyle Laboratories. The specific models used in this analysis are published in Wyle Research Report WCR 73-8 and WCR 74-3 (as presented in the City of Los Angeles EIR Manual) for road traffic and WCR 73-5 for rail traffic. These models are based on a large sample of field noise measurements of road and rail traffic, and predict L_{dn} noise levels as a function of specified traffic data.

A modeling approach was taken in developing the noise contours for two reasons: (1) collection of input data for the models was more practical than collection of field measurements under the time and budget constraints of the study, and (2) modeling techniques for L_{dn} noise levels have been shown to be just as reliable as calculations based on field measurements. As a basis for this second reason, it should be remembered that L_{dn} is calculated from measurements and not measured directly. A certain amount of sampling error is involved in the data collection as well as errors developed by the calculations such that L_{dn} based on field measurements has a similar inherent error as does mathematical modeling. The exact expression of L_{dn} levels is found in integral calculus. For applications to road and rail traffic, however, it is possible to approximate the L_{dn} by expressions which avoid computation of the integral, and are accurate to within less than plus or minus 1 dB. The basic expression is:

$$L_{dn} = \underline{SENEL} + 10 \log N - 49.4$$

where,

$\underline{SENEL}$ = Average Single Event Noise Exposure Level

N = Number of road or rail operations

49.4 = a normalization factor equal to 10 log (3600 secs/hr x 24 hrs)

and where,

$$SENEL = L_{max} + 10 \log t_{ea}$$

with,

L_{max} = maximum noise level as observed on the A scale of a standard sound level meter.

t_{ea} = effective time duration of the noise level in seconds. It is about equal to ½ of the "10 dB down duration" or the duration for which the noise level is within 10 dB of L_{max}.

and,

$$N = N_D + 10N_N$$

with,

N_D = Number of operations between 7:00 a.m. and 10:00 p.m.

N_N = Number of operations between 10:00 p.m. and 7:00 a.m.

The value of the modeling procedure is that the SENEL has been defined through sample measurements and correlated to such factors as vehicle speed and acceleration. This kind of information, then, along with the number of operations, can be used to predict the L_{dn} noise levels. Other factors, such as existing noise barriers, can also be accounted for through modeling in estimating the propagation of noise into the community.

3.3.2 Input Data

The importance of the input data in mathematical modeling cannot be understated. The accuracy of the final noise level estimate relies heavily on this information as a description of the "real world". The following lists of information describe the kind of input data used in calculating the noise levels of transportation sources. Specific compilations of these data for the City of Lancaster are contained in Appendices F and G.

a. Road Traffic Data

1. List of roads selected for evaluation.

2. Road segment identification as defined by the following parameters (no. 3 through 9). When one of these parameters changes, a new road segment is defined.

3. Average Daily Traffic (ADT) broken down into hourly flows for the daytime (7:00 a.m. to 10:00 p.m.) and the nighttime (10:00 p.m. to 7:00 a.m.).

4. Lane configurations: number of lanes and average width of median strip divides, if any.

5. Percentage of diesel truck traffic on the road segment.

6. Representative speeds for road segments as determined by the posted speed limit and observations of variations to that limit.

7. Road grade conditions: mild (0 to 2 percent), moderate (3 to 5 percent), and severe (greater than 6 percent).

8. Road sideline terrain characteristics; i.e, is the sideline elevated, depressed, or level with the road bed.

b. Rail Traffic Data

1. Line segment identification.

2. Representative train speeds.

3. Average train lengths.

4. Grade conditions. Grades are considered in three categories: Level (within $\pm$ 0.75 percent), upgrade (greater than + 0.75 percent), and downgrade (greater than - 0.75 percent).

5. Sideline characteristics.

6. Identification of track characteristics:

    (a) Mainline welded or jointed track.

    (b) Low speed classified jointed track.

    (c) Presence of switching frogs or grade crossings.

    (d) Tight radius curves:
        (1) radius less than 600 feet.
        (2) radius 600 to 900 feet.
        (3) radius greater than 900 feet.

(e) Presence of bridgework:
   (1) light steel trestle.
   (2) heavy steel trestle.
   (3) concrete structure.

7. Number of operations broken down into the number of day and night operations.

The information describing current road traffic in the City was provided by the Los Angeles County Road Department and CALTRANS. Rail traffic data were provided by the Southern Pacific Transportation Company. The References section lists the sources of published and unpublished data used in computing noise exposure.

3.3.3 Modeling of Noise from Aircraft Operations

Noise contours for Air Force Plant (AFP) 42 and Palmdale International Airport (PMD) were generated using a standard computer model that considers the following operational data:

a. flight tracks,
b. flight profiles,
c. power settings,
d. ground runup (duration),
e. numbers and type of aircraft used,
f. time periods of aircraft operation.

This operational data was combined with the particular SENEL for individual aircrafts and local air to ground noise propagation characteristics to generate and plot noise contours. In the case of AFP 42, the computer generated L_{dn} noise contours (ITT Technical Services, Inc., May 1976, as amended 8 May 1978), while CNEL contours were generated for PMD (Department of Transportation, February 1979). As previously mentioned, there is no significant difference between these two measurement schemes. Only the noise contours for AFP 42 were included in the estimate of current noise levels.

3.4 Future Noise Predictions

3.4.1 General

In planning for noise control at the local government level, it is necessary to consider what the future noise environment may be like. For the most part, two factors will control environmental noise levels over the next 20 years. These are (1) the level of use transportation facilities will receive, based on estimates of demand, and (2) advances in noise reduction technology and better application of existing technology.

The Noise Control Act of 1972 assigned the primary role in controlling environmental noise, particularly at the Federal level, to the Environmental Protection Agency. Under this legislation, the EPA has set standards for new vehicles that will incrementally decrease noise emissions from individual vehicles. However, the reduction in overall noise levels caused by these standards may be counterbalanced by increases in the number of sources, specifically, increases in traffic volume. In addition, there are limits to what can be achieved in technological solutions to the noise problem. For example, a major contributor to road traffic noise is tire noise. Reductions in tire noise are limited, at least in existing technology, by safety considerations in tread design.

Because of the limitations of technology and the expected increase in traffic, land use regulation will be a necessary part of noise control over the next 20 years. Through a combination of noise source control by the Environmental Protection Agency and land use control by local governments, a noise environment compatible with a variety of activities can be achieved.

3.4.2 Road Traffic

In forecasting 1990 noise levels from road traffic, it has been assumed that automobiles and trucks will still utilize rubber tires on asphalt and concrete surfaces. This assumption limits the amount of noise reduction which can be expected from technological means alone. Even if engine and exhaust noise could be eliminated, the interaction between tire tread and road surface would continue to emit high noise levels.

The characteristics of automobile noise are expected to remain the same as existing vehicles, but the level of noise is forecast to decrease by about 3 dB over the typical range of operating speeds (Figure 12). This level

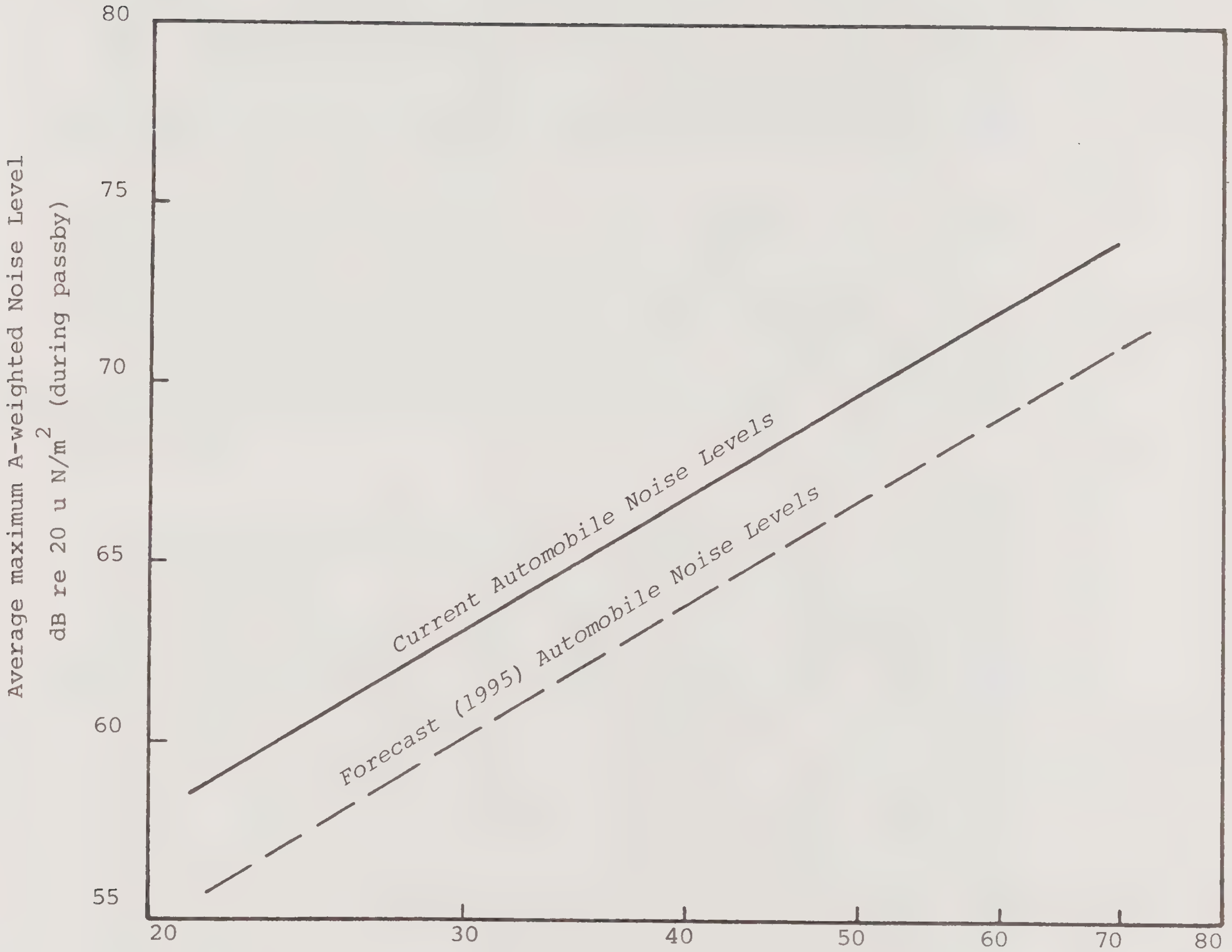


FIGURE 12 Average maximum passby noise level of automobiles (at 50 feet) for current and forecast years.

SOURCE: Wyle Laboratories, 1973.

of noise reduction assumes enforcement of legal constraints and application of currently available technology (Table 5.12).

Noise emissions from heavy trucks are also assumed to decrease for the forecast year. This will require application of current "state-of-the-art" technology at the production level. Such technology indicates that maximum noise levels of 70 dBA at 50 feet are attainable. This represents a noise level reduction of 10 to 15 dBA from some models currently in use (Figure 13). Levels much below 70 dB do not seem to be feasible at this time because of economic and safety considerations in tire design.

Overall noise levels from road traffic, then, are assumed to decrease at the source for purposes of this Element. If legal constraints go unenforced, or if adequate noise control technology is not applied, noise levels will, of course, increase. Since it is always possible that the necessary noise control technology will not be applied in the coming years, it is necessary to review this Element periodically to assess the validity of the noise projections.

3.4.3 Rail Traffic

The Federal government is currently predicting a huge increase of 2 to 3 times the amount of freight currently carried by railroads by the year 2000. The basis of this prediction is the continuing energy shortage which will eventually require that fuel efficient transportation modes, such as railroads, be utilized to the maximum practical. The Southern Pacific Transportation Company is currently upgrading the north-south line through the City of Lancaster to improve current operations and to be prepared for potential future increased operations (Southern Pacific Transportation Company, 1979, personal communication). However, SPTC does not envision an increase in freight loads as high as the Federal government does, and are instead expecting a 50% to 100% increase. These increased freight loads can be handled two ways, either by adding cars to existing trains, or by increasing train oeprations. Since current trains usually operate at their optimum efficiency, it is more probable that the number of operations would increase rather than extensive lengthening of existing trains.

For the general planning purposes of this Noise Element, it was assumed that operations would increase 100% over existing routes, which would result in a substantial increase in future noise levels in the vicinity of the rail line. The noise impact of this probable increase in rail traffic is potentially mitigated by two factors:

TABLE 5.12 FUTURE VEHICLE NOISE LIMITS

Noise Source	*Limit, dB(A)*
Motorcycle manufactured:	
a) after 1974 and before 1981	83
b) after 1980 and before 1986	80
c) after 1985 and before 1990	75
d) after 1989	70
Automobiles manufactured:	
a) after 1974	80
Vehicles with gross weight greater than 6,000 pounds manufactured:	
a) after 1977 and before 1988	80
b) after 1987	70

Source: California Vehicle Code, Section 27200, 27202, 27204, and 27205.

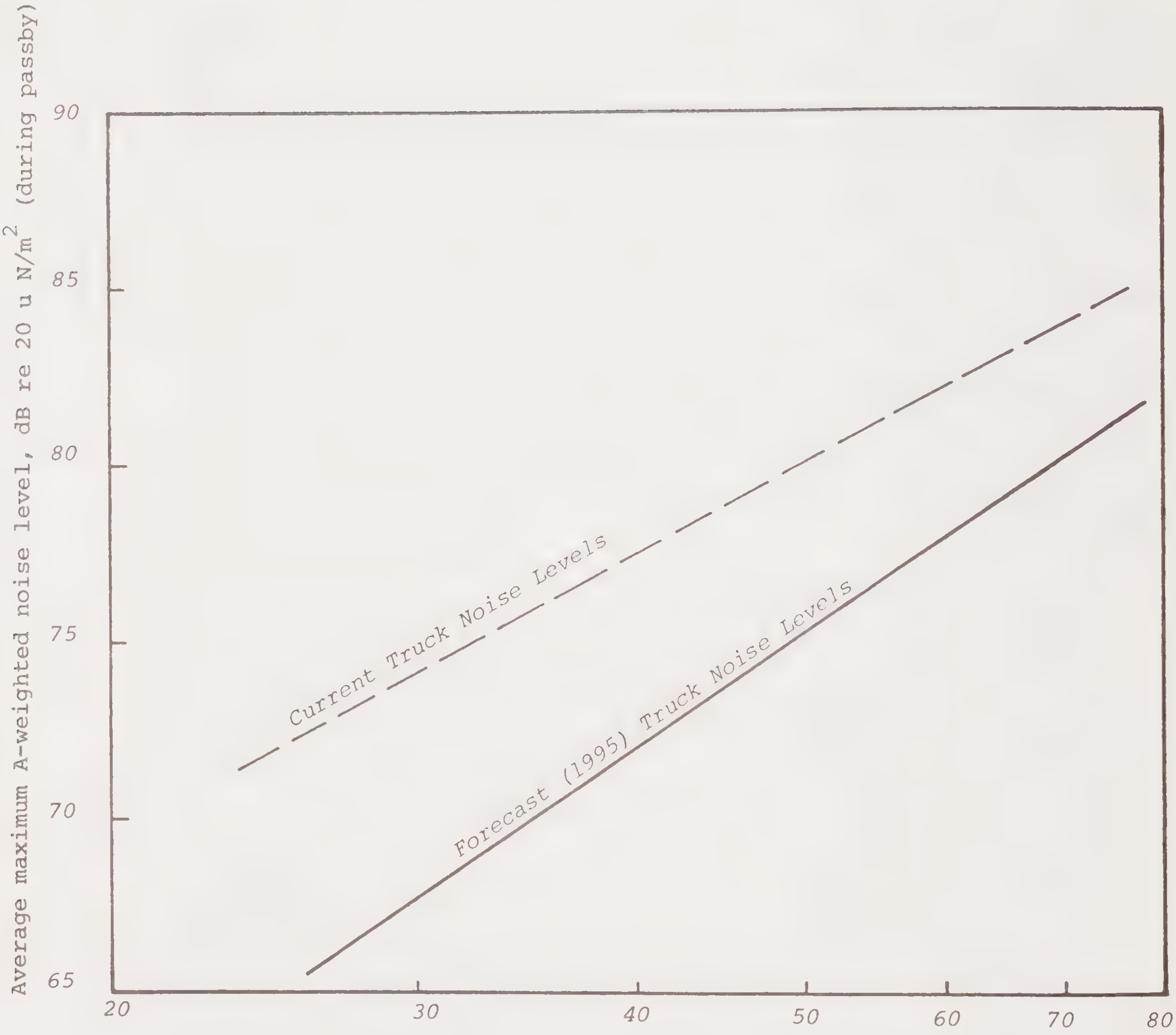


FIGURE 13 Average maximum passby noise levels of heavy trucks (at 50 feet) for current and forecast years.

SOURCE: Wyle Laboratories, 1973.

a. Studies on experimental trains forecast quieter trains that are capable of higher speeds than existing trains.

b. As more freight is hauled by trains, truck traffic should decrease, resulting in lower noise levels along major north-south truck routes such as the Antelope Valley Freeway (Route 14).

The exact result of these two factors is difficult to predict and beyond the scope of this Element.

3.4.4 Air Traffic

The proposed construction of an international airport at Palmdale (PMD) is a critical element in forecasting future noise levels in the City of Lancaster. This airport will not only affect the noise environment along the proposed flight paths, but also along the major roadways servicing the airport due to the substantial increase in traffic expected to be caused by the airport.

Noise from flight operations at PMD alone are not expected to affect the noise environment within the City of Lancaster (Department of Transportation, February, 1979); however, a dispute is currently in progress regarding whether or not AFP 42 will be closed down and if some AFP 42 operations will be transferred to PMD. If AFP 42 is closed down, the future noise environment in the southern portion of the City of Lancaster will be substantially quieter. Similarly, a case study considering limited operations at AFP 42 in conjunction with operations at PMD (DOT, 1979) concluded that the combined operations would not affect the City of Lancaster. However, this case study did not consider recent changes in flight patterns at AFP 42 (Amendment to the AICUZ Study, 8 May 1978) which have shifted most operations to the east-west runways. For the purposes of this Noise Element, a worst case situation for the future was considered based on the following assumptions:

a. AFP 42 will continue to operate along its present flight paths with no decrease in the number of operations; and

b. PMD will be constructed and flight operations will correspond to Case Study No. 1, 1995, Normal Pattern (DOT, 1979).

This future worst case situation would result in increased noise levels in the City's southern areas.

3.5 Noise Contouring

Quantitative estimates of existing and future noise exposure in the City are provided in two forms in this report. Appendices B and C contain this data in tabular form. The noise contours are lines connecting points of equal sound intensity. They form bands 5 dBA in width along the roads, railroad, and flight paths from the airports. Some attempt was made in this analysis to account for the effects of the more significant sideline features along the freeway, which are primarily those areas where the route is depressed or elevated relative to the surrounding topography. The effect of these sideline features is to partly attenuate the propagation of higher sound levels into the community. This is represented by the contour lines being closer together at depressed freeway locations, and the lack of 65 and 70 dB(A) contours at the ground level where the elevated freeway provides shielding for adjacent environs. Analysis of attenuation and reverberation due to small sideline features, such as buildings, is beyond the scope of this analysis, and would not be appropriate to noise evaluation at a city-wide level for general planning purposes. It should be remembered, then, that the noise contours are general indicators of noise exposure and not precise levels. It should also be noted that the noise contours only represent noise generated by road, air, and rail traffic. These contours will not account for interior noise or outdoor noise generated by construction work, individual persons, miscellaneous noises such as window air conditioning units, or other stationary sources.

The preparation of the noise contour maps involved a certain amount of estimating and smoothing. For example, the contour lines at intersections of roads were rounded away from the intersections indicating an increase in noise levels. Intersections are generally noisier than line sources because traffic volumes increase there. Additionally, many vehicles (e.g., trucks) create more noise under stop-and-go conditions than at steady speeds. The rounding of the contour lines represents this condition, but is not an exact estimate of the magnitude. Precise estimates should be made through site analysis.

The procedure used in contour mapping for this Noise Element is in compliance with Government Code Section 65302(g) as amended. Contours are shown in increments of 5 dB and continue down to 60 dB. Noise exposure levels for schools, hospitals, and convalescent hospitals were determined by direct measurement (see Appendix H).

4.0 Noise Environment

4.1 Identification of Major Sources

The guiding criteria in judging whether a noise source is a "major" source is whether it emits an Ldn of 65 dB(A) or more. Noise exposure to these sources is likely to be incompatible with the most sensitive land uses such as residences, schools, hospitals, and parks. Of these sources (Table 5.13), the rail line and Air Force Plant 42 are the greatest potential noise problems in the City because of the relatively high levels of noise emitted by the sources, their intermittent character, their pervasiveness within the community, and the inherent difficulty of mitigating these particular noise sources. In addition, noise levels from Air Force Plant 42 are not expected to decrease significantly in the future, and noise levels from the railroad are expected to increase greatly.

Of the other transportation noise sources, most are expected to emit lower noise levels in the future due to quieter vehicles, wider roadways, and reduced vehicle speeds. However, several roadways will continue to be major sources in the future, and many local streets will become minor sources by emitting noise levels greater than an Ldn of 60 dB(A).

Other possible major sources of noise in the City of Lancaster include the general aviation airports of Quartz Hill and Fox Airport and industrial facilities. However, the airports currently do not contribute substantial noise to the City because of their low usage and are not expected to in the future. Industrial noise sources that could potentially affect other land uses are currently isolated from such use or are situated near the railroad where train operations dominate the noise environment. Future intrusive industrial noise would be eliminated by appropriate actions based on the policies of this Noise Element.

TABLE 5.13

MAJOR NOISE SOURCES IN THE CITY OF LANCASTER

Existing	*Future (Year 2000)*
a. *Ldn of 80 dB(A) and greater:*	
Railway at switching frogs	Entire railway
b. *Ldn of 70-80 dB(A):*	
Air Force Plant 42	Air Force Plant 42
Sierra Highway btn. Ave. K and Ave. M	Route 14 south of Ave. I
Antelope Valley Freeway (Route 14)	
c. *Ldn of 65-70 dB(A):*	
Ave. I	Ave. I btn. 25th St. W. and Route 14
Lancaster Blvd. btn. 10th St. W. and Sierra Highway	Ave. I btn. 10th St. W. and 10th St. E.
Ave. J east of 20th St. W.	Ave. J btn. Route 14 and 10th St. E.
Ave. K btn. 20th St. W. and 5th St. E.	Ave. K btn. Route 14 and 20th St. E.
Ave. L btn. 40th St. W. and Route 14	Ave. K-8 btn. 10th St. W. and Sierra Highway
Ave. L btn. 10th St. W. and Sierra Highway	Ave. L btn. Route 14 and 20th St. E.
Ave. M btn. 40th St. W. and 10th St. E.	10th St. W.
30th St. W. btn. Ave. J and Ave. J-8	Sierra Highway btn. Ave. J and Ave. L
30th St. W. btn. Ave. K and Ave. L	10th St. E. btn. Ave. J and Ave. L
20th St. W. btn. Ave. K and Ave. L	Route 14 north of Ave. I
15th St. W. btn. Ave. J and Ave. K	
10th St. W.	
Sierra Highway	
Division St. btn. Ave. J and Ave. K	

4.2 Noise Sensitive Land Use

All land uses may be considered to be sensitive to noise, but to different levels. Land use sensitivities may be thought of as a continuum with some uses able to tolerate a high level and others unable to tolerate any but the quietest level. The level of tolerable or "acceptable" noise is a function of the subjective desires of the community, and the average exposure times of people in different areas. This latter concept is related to the premise underlying the Sound Equivalent Level. That is, it is acceptable to be exposed to high noise levels for part of the day as long as this exposure is compensated by being in a quiet environment later on. For example, the acceptable noise level for industrial land use is 75 dB(A) (Ldn). A person working in that environment, however, should be compensated by spending a certain amount of time in an interior residential area where the acceptable noise level is 45 dB(A) (Ldn).

The land use noise standards recommended in the Policy Report serve, in effect, to define the sensitivity of each land use. The maximum acceptable noise level for a land use is the level dividing the "Conditionally Acceptable" and "Normally Unacceptable" noise levels. A summary of these levels is given in Table 5.14. These standards may be used in identifying noise conflict areas as described in the next section.

TABLE 5.14

SUMMARY LAND USE COMPATIBILITY STANDARDS

Land Use	*Exterior Noise Exposure, Ldn (dBA)*[1] *Normally Acceptable*	*Conditionally Acceptable*
Residential - single family, multi-family, dormitories, etc.	55-60	65
Transient lodging	60-75	70
School classrooms, libraries, churches	60-70	70
Hosptials, convalescent homes	60-70	70
Auditoriums, concert halls	-	70
Sports arena, outdoor spectator sports	-	75
Playgrounds, parks	67.5	-
Golf courses, riding stables, cemeteries	70-75	-
Office buildings, commercial	67.5-70	75-77.5
Industrial, manufacturing	70-75	75-80

[1]These noise exposure levels represent the upper limit of the range of "normally or conditionally acceptable" noise levels. A normally acceptable level indicates that the specified land use is satisfactory. A conditionally acceptable level is defined as an exposure great enough to be of concern such that a detailed analysis of the noise environment is necessary, with the installation of noise reducing features as necessary. Above these levels, unusual and costly building constructions are necessary to ensure a sufficiently quiet interior environment.

4.3 Noise Conflict Areas

Potential noise conflict areas are those sections of an existing or proposed land use exposed to noise levels which are incompatible with that use of the land. They are termed "potential" noise conflict areas because both the land use and noise exposure representation are generalized. A site analysis might show that the particular area in conflict is not as sensitive as the general land use. For example, the conflict areas for the residences along Avenue J occur within 65-75 feet of the roadway. Depending on home setbacks or the presence of noise barriers at various sites, noise could be at acceptable levels. The intent of identifying noise conflict areas is to point out those places that deserve site analysis in a noise control program.

The actual identification of a noise conflict area is a simple, graphical problem given the noise sensitivities of various land uses and a noise contours map. By overlaying a land use map with a noise contours map, identification of conflicts can be made directly. Once these conflict areas have been identified, it is recommended that a site analysis be conducted to determine the precise nature of the noise problem, if any is confirmed to exist.

Current major noise conflict areas in the City of Lancaster are limited to residential areas lying within the 65 dB(A) contour of the noise sources listed in Table 5.13. No schools, hospitals, convalescent homes, or parks are currently exposed to noise levels that are greater than conditionally acceptable standards. Incompatible outdoor noise levels may impact some commercial and industrial areas located along Sierra Highway and the railroad.

Based on normally acceptable criteria, some sensitive land uses (schools and hospitals) are currently impacted by high noise levels (Table 5.15). Table 5.15 also indicates that expected future increases in noise from the Southern Pacific Railroad and the Palmdale International Airport (PMD) will affect several schools. These are considered minor noise conflict areas.

TABLE 5.15

NOISE IMPACTED AREAS BASED ON NORMALLY ACCEPTABLE CRITERIA

Moderately Impacted Land Use	*Source(s)*
Parkview School	Ave. J and Southern Pacific Railroad[1]
Antelope Valley Hospital	Ave. J
Lancaster Convalescent Hospital	Ave. J
Slightly Impacted Land Use	
Lancaster Community Hospital	10th St. W.
Antelope Valley High School	Lancaster Blvd. and Division St. and Southern Pacific Railroad[1]
Joshua School	Air Force Plant 42
Mariposa School[1]	Southern Pacific Railroad
Minimally Impacted Land Use	
Antelope Valley Hospital	15th St. W.[2]
Antelope Valley College	Ave. K and 30th St. W.[2]
Antelope Valley High School	Southern Pacific Railroad
Paraclete High School	Air Force Plant 42 and PMD[1]
Sierra School	Air Force Plant 42
Valley View School[1]	Air Force Plant 42 and PMD
Desert View School[1]	Ave. H-8

[1]Expected future impact.

[2]Expected to decrease as a significant noise source in future.

4.4 Noise Exposure

Noise exposure is defined as the total acoustical stimulation reaching a person's ear over a specified period of time. How much noise exposure is acceptable for what land uses and times of day are questions that are addressed in the Policy Report. The recommended land use noise compatibility guidelines in the Policy Report are intended to provide some answers.

The general noise exposure of the City of Lancaster's population was estimated based on the location of current and future residential land use relative to the major noise sources. By overlaying the noise contour maps on current and proposed land use, the acreage of various types of residential use affected by varying noise levels was determined. These acreages were then multiplied by a population factor to estimate the number of people affected by current and future noise levels (Tables 5.16 and 5.17). It should be noted that this is only an approximation -- for some people, such as those who both live and work in unacceptably high noise levels, it underestimates noise exposure; while for those who live in a marginally high noise environment but work in a low noise environment, the approximation overestimates noise exposure.

TABLE 5.16

Current Noise Exposure
(Estimate)

Residential Land Use	L_{dn} Noise Exposure, dB(A)				
	>75	75-70	70-65	65-60	<60
Non-Urban					
No. of People	23	470	923	1712	233
% of Population	0.05	1.0	2.0	3.8	0.5
Low to Moderate Dens.					
No. of People	28	106	2833	6177	22,924
% of Population	0.06	0.2	6.2	13.6	50.5
High Density					
No. of People	93	385	1341	4208	3910
% of Population	0.21	0.9	3.0	9.3	8.6
Total					
No. of People	144	961	5097	12,097	27,067
% of Population	0.3	2.1	11.2	26.7	59.7

TABLE 5.17

Estimated Future Noise Exposure

Residential Land Use	L_{dn} Noise Exposure, dB(A)			
	>70 *	70-65	65-60	<60
Non-Urban				
No. of People	140	1902	6029	14,569
% of Population	0.06	8.7	2.7	6.6
Single Family				
No. of People	152	11,254	37,180	79,792
% of Population	0.07	5.1	16.9	36.3
Multifamily (MR)				
No. of People	242	3186	13,000	22,925
% of Population	0.1	1.4	5.9	10.4
Multifamily (MR 2)				
No. of People	5699	6392	6626	10,733
% of Population	2.6	2.9	3.0	4.9
Total				
No. of People	6233	22,734	62,835	128,019
% of Population	2.8	10.3	28.6	58.2

*Areas exposed to a noise exposure in excess of an Ldn of 75 dB(A) are omitted due to the small number of areas affected.

5.0 Conclusions

The following conclusions are a summary of the major technical findings of this analysis of environmental noise in the City of Lancaster, and are integral to the objectives of the Policy Report.

1. Generally, the City of Lancaster may be considered a relatively quiet environment. Major noise conflict areas are limited to residential uses adjacent to the railroad or along the flight path of Air Force Plant 42 operations. Monitoring at locations deemed noise sensitive and use of more stringent criteria indicates that there are several more minor noise conflict areas, particularly for the hospitals along Avenue J and Parkview School.

2. The most significant source of noise in the City is rail traffic, followed by air traffic from Air Force Plant 42, road traffic along Route 14, and local road traffic. The following sources emit noise levels greater than an Ldn of 70 dB(A): the railroad, Air Force Plant 42, Sierra Highway, and Route 14 (Antelope Valley Freeway).

3. Increases in rail traffic due to expected substantial increases in freight loads will significantly increase noise levels in areas adjacent to the rail line. This expected increase in noise levels may be partially offset by the use of newer, quieter trains.

4. Increases in the traffic volume on the various roadways in the planning area are expected to be partially offset by anticipated reductions in noise levels from cars and trucks, wider roadways, and slower speeds.

5. Introduction of a major international airport in the Palmdale area will result in higher noise levels in the City of Lancaster, even with the anticipated use of quieter aircraft, provided that Air Force Plant 42 does not close down. If Air Force Plant 42 experiences substantial decreases in flight operations due to transfer of flights to PMD, then the noise environment in the southern portion of Lancaster will become substantially quieter.

6. Future growth of industrial and commercial developments in the City will have an unknown effect on future noise levels in their vicinity, but will have a substantial effect by increasing road traffic volumes.

7. The potential increase in future noise levels clearly points out the need for effective land use planning.

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PERSONAL COMMUNICATIONS

Air Force Plant 42	Major Ed Hull Major Tom Stottman
Barton-Aschman, Inc.	Bob Bramen, Traffic Engineer
Caltrans	Walter Frendo, Engineer
City of Lancaster	Kyle P. Kollar, Director of Planning and Community Development
Los Angeles County	
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6. Seismic Safety Element

1.0 Introduction

The basic objective of the Seismic Safety Element is to identify and evaluate policies that would reduce the negative impact of seismic events in the City of Lancaster and its planning area. The policies recommended in this Element were selected because they offer an opportunity to reduce loss of life, personal injury, and property damage, as well as economic and social dislocation that result from an earthquake. This Element is required by 1971 State law and must be included in the General Plan for all cities and counties in California.[1]

The Seismic Safety Element is the principal geotechnical component of land use planning. Geological hazards, other than those associated with seismic phenomena, are discussed in other Elements. For example, such non-seismic hazards as slope stability and erosion susceptibility are included in the Public Safety Element. Geotechnical data related to mineral and soil conservation and preservation of unique natural resources are addressed by the Open Space and Conservation Sections of the Environmental Resources Management Element. General information regarding natural features of the City is also included in the Environmental Resources Management Element.

Information on seismic activity, even when the safety aspects are intended for the use of one particular area, in this case the City of Lancaster, can only be obtained from studying a much larger area. The San Andreas rift zone which lies at the southern edge of the Antelope Valley is recognized as a major active earthquake fault. To examine the potential impact of movement of the San Andreas Fault, it is necessary to gather data from various sources and to make comparisons between this active fault and the movement of other such faults. A number of studies have attempted to assess the after effects of earthquakes of various magnitudes. Much of the information presented here is gleaned from the findings of these studies.

A pilot study of the San Fernando earthquake of 1971 was recently completed by a consultant group headed by Woodward-McNeill & Associates. This study, which evaluated Seismic Considerations for Land Use Planning (SCLUP), is a significant reference work for the current investigation. Some of its concepts and recommendations were adopted in this study.

State legislation related to seismic and geologic concerns includes the following:

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[1]Government Code, Section 65302f.

1. Public Resources Code - Sections 660-662 and 2621-2625 (the Alquist-Priolo Act) require the State geologist to delineate study zones encompassing both recently active and potentially active fault traces. (The provisions, intent and land use implications of the Alquist-Priolo Act will be discussed in greater detail in this Element.)

2. Education Code - Section 15002.1 requires geological and soil-engineering studies for all new school sites. These studies must also be conducted on existing sites if they are deemed necessary by the State Department of General Services.

   Sections 15451-15466 (the Field Act) state that public schools must be designed for the protection of life and property.

3. Health and Safety Codes - Section 15000 et seq., require geological and engineering studies for each new hospital or addition to an existing hospital.

   Sections 19100-19150 state that certain buildings must be constructed to resist lateral forces during earthquakes.

2.0 Existing Conditions

In the context of seismic safety and potential earthquakes, the City of Lancaster must be evaluated in relation to the larger geographic area. The Antelope Valley (along with the greater part of California) forms the eastern edge of the continental plate in the earth's crust which is bounded by the San Andreas Fault. Southern California is divided into two distinct plate regions separated by the fault zone. The northern region is represented by the Antelope Valley, which is the western extreme of the Mojave Desert. The southern region includes the central mountains of Los Angeles County which include the San Gabriel, Sierra Pelona and Santa Susana Ranges. The most distinctive geologic feature in the area is the San Andreas Fault Zone which divides the southern (Pacific Plate) region from the northern (Continental Plate) region. In this fault zone, pressures of these two plates can trigger great movements, resulting in earthquakes. The last movement in this area occurred in 1857. To the geologist, the Antelope Valley lies in the western part of the Mojave Desert "block". The northwestern and southwestern boundaries of this valley were formed by uplift along the fault zones now occupied by the Garlock and San Andreas Faults.

Rocks of the region may be divided into three main divisions. The first two groups consist of hard, consolidated materials in the mountains bounding the area and the rocky buttes that penetrate up through the valley floor outside the City boundary. The third group is the unconsolidated alluvial soils found in the wash areas of the lower foothill sand stream beds that comprise the majority of the valley floor. The City is entirely underlain with unconsolidated alluvial soils. Beneath this alluvium lie consolidated rocks that are equivalent to the older materials forming the San Gabriel and Tehachapi Mountains.

2.1 Geologic History

The geologic history of the area has been long and complex. The present geologic structure and topography, however, can be viewed in light of a relatively simple pattern outlining past events. Prior to Tertiary time (i.e., up to about 65 million years ago), the region was subject to deposit of sediments during various periods (refer to Table 6.1, Geologic Time Scale Showing Age of Formations and Fault Classifications). Rocks that are now exposed in the mountains were buried to depths of several miles. High pressure and temperature changed them to harder rocks, such as the "schists" and "gneisses" now seen.

In addition, deep-seated activity in the earth's core led to the intrusion of molten materials which crystallized to form granitic rocks. Following these events, a general uplifting of this portion of the earth's crust, consequent erosion and removal of overburden raised these rocks to relatively shallow levels beneath the earth's surface.

Roughly 30 million years ago, the area underwent renewed movements accompanied by volcanic activity and intrusive events at greater depth. Uplift caused continued erosion and redeposition of some of the rocks as sediments.

As time proceeded, volcanic activity ceased, but continued erosion of the complexly faulted Tehachapi and San Gabriel Mountains produced a thickening pile of clays, sands and gravels, most of which became buried deeply enough to become consolidated into hard rock. Activity along the Garlock and San Andreas Fault zones continued, with motion occurring along many lesser parallel faults in these zones.

The most recent uplift of the San Gabriel and Sierra Pelona Mountains has resulted in extensive erosion. Material that has been continually eroded from these mountains has accumulated on the lower parts of the Antelope Valley and the City of Lancaster. Coarser-grained sediments have concentrated themselves closest to the mountains; finer-grained silts and clays have been deposited in the lower elevations of the valley. Pulsations in the rate of uplift and climatic fluctuations have produced a complex layering of soils. This erosion and deposition is continuing.

TABLE 6.1

GEOLOGIC TIME SCALE SHOWING AGE OF FORMATIONS
AND FAULT CLASSIFICATIONS

RELATIVE GEOLOGIC TIME				ATOMIC TIME (in millions of years)
Era	Period		Epoch	
Cenozoic	Quaternary		Holocene	.011
			Pleistocene	2-3
	Tertiary		Pliocene	12
			Miocene	26
			Oligocene	37-38
			Eocene	53-54
			Paleocene	65
Mesozoic	Cretaceous		Late Early	136
	Jurassic		Late Middle Early	190-195
	Triassic		Late Middle Early	225
Paleozoic	Permian		Late Early	280
	Carbon-iferous Systems	Pennsyl-vanian	Late Middle Early	
		Mississip-pian	Late Early	345
	Devonian		Late Middle Early	395
	Silurian		Late Middle Early	430-440
	Ordovician		Late Middle Early	500
	Cambrian		Late Middle Early	570
Precambrian				3,600+

ACTIVE FAULTS*

POTENTIALLY ACTIVE FAULTS

INACTIVE FAULTS

Note: Bedrock formations underlying the study area range the entire span of the geologic time scale. Some periods within the Paleozoic Era may not be presented.

*Note: As defined by policies and criteria of State Mining & Geology Board.

2.2 Faults and Seismic Hazards

The presence of the San Andreas Fault and the hazard it poses (basically ground rupture and seismic shaking effects) is a determinant in evaluating potential hazards to land use. Relative risk zones are delineated for the city according to two factors: the potential earthquake source; and the type of response anticipated at a given site due to its underlying soil/groundwater conditions.

Secondary seismic hazards such as liquefaction, seismically-induced ground sliding, ground lurching and seiches were also evaluated. Only liquefaction was considered to be a potential hazard in Lancaster and therefore was mapped.

2.2.1 Faults Classification

Faults are categorized as active, potentially active, and inactive (or presumed inactive), as defined by State guidelines. Their state of activity, length (potential for large earthquakes), and location are important factors in evaluating seismic hazards. Faults and seismic zones are shown on Figure 1. Fault classifications shown on Figure 1 are based on classifications established by the California Division of Mines and Geology.

1. Active Faults - This category includes faults that have exhibited earthquake activity and/or surface rupture within the last 11,000 years. The San Andreas zone (as delineated by the Division of Mines and Geology for the Alquist-Priolo Act) is an active fault.

2. Potentially Active Faults - This category includes faults that have exhibited movement within the last two to three million years, but have not exhibited any documented activity within the last 11,000 years. There are no potentially active faults in the City.

2.2.2 Earthquake Magnitude and Probable Recurrence Intervals

The principal fault most likely to produce a damaging earthquake in or near the City is the San Andreas fault. The San Andreas fault has a maximum probable Richter magnitude of 8.0+ and a recurrence interval of 50-200 years. These estimates are based primarily on probable length of fault rupture and past seismic history.

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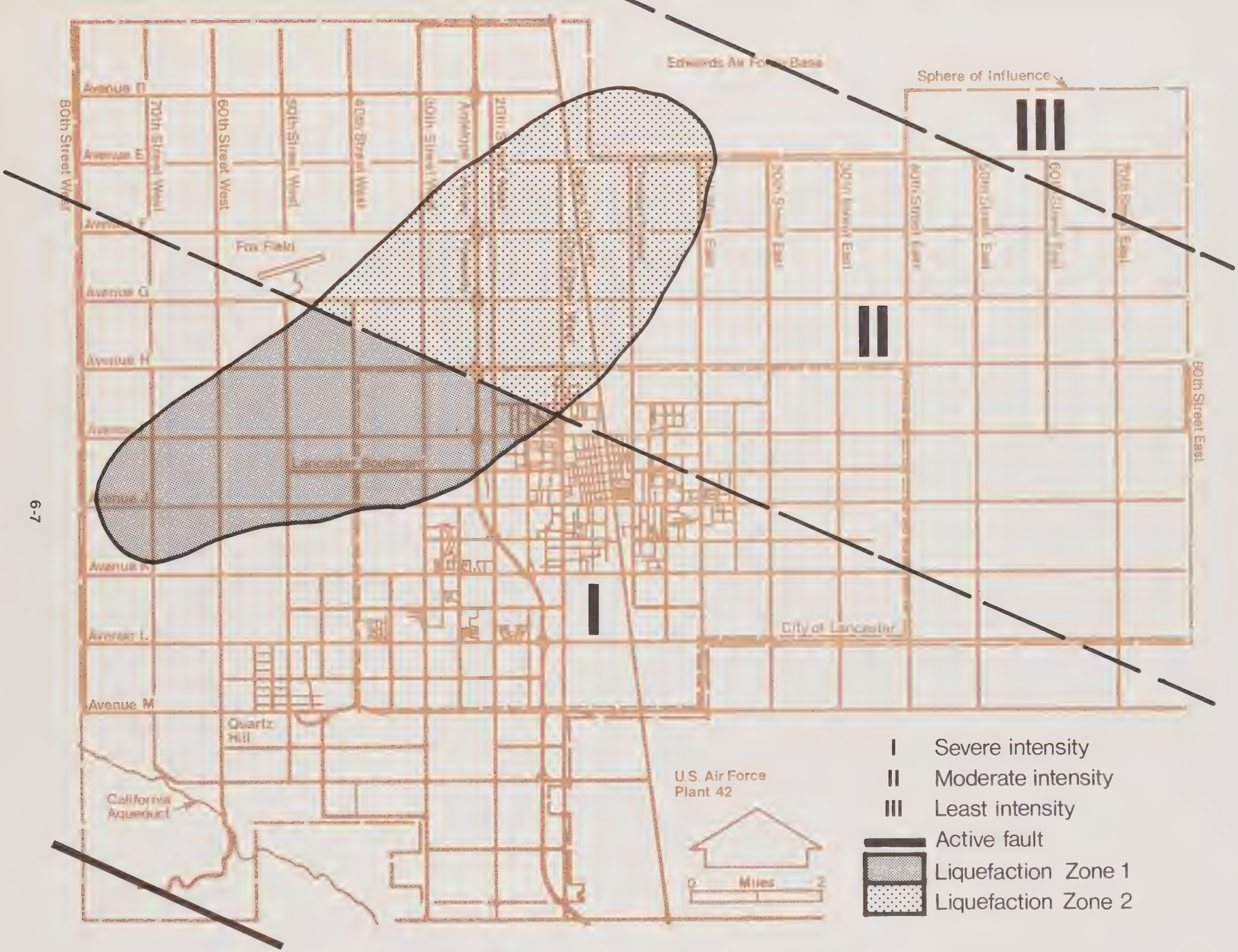
[1] C. W. Jennings, California Division of Mines and Geology Preliminary Report #13, 1973.



Faulting and Seismic Zones

Figure 1

2.2.3 Seismicity and Seismic Shaking Zones

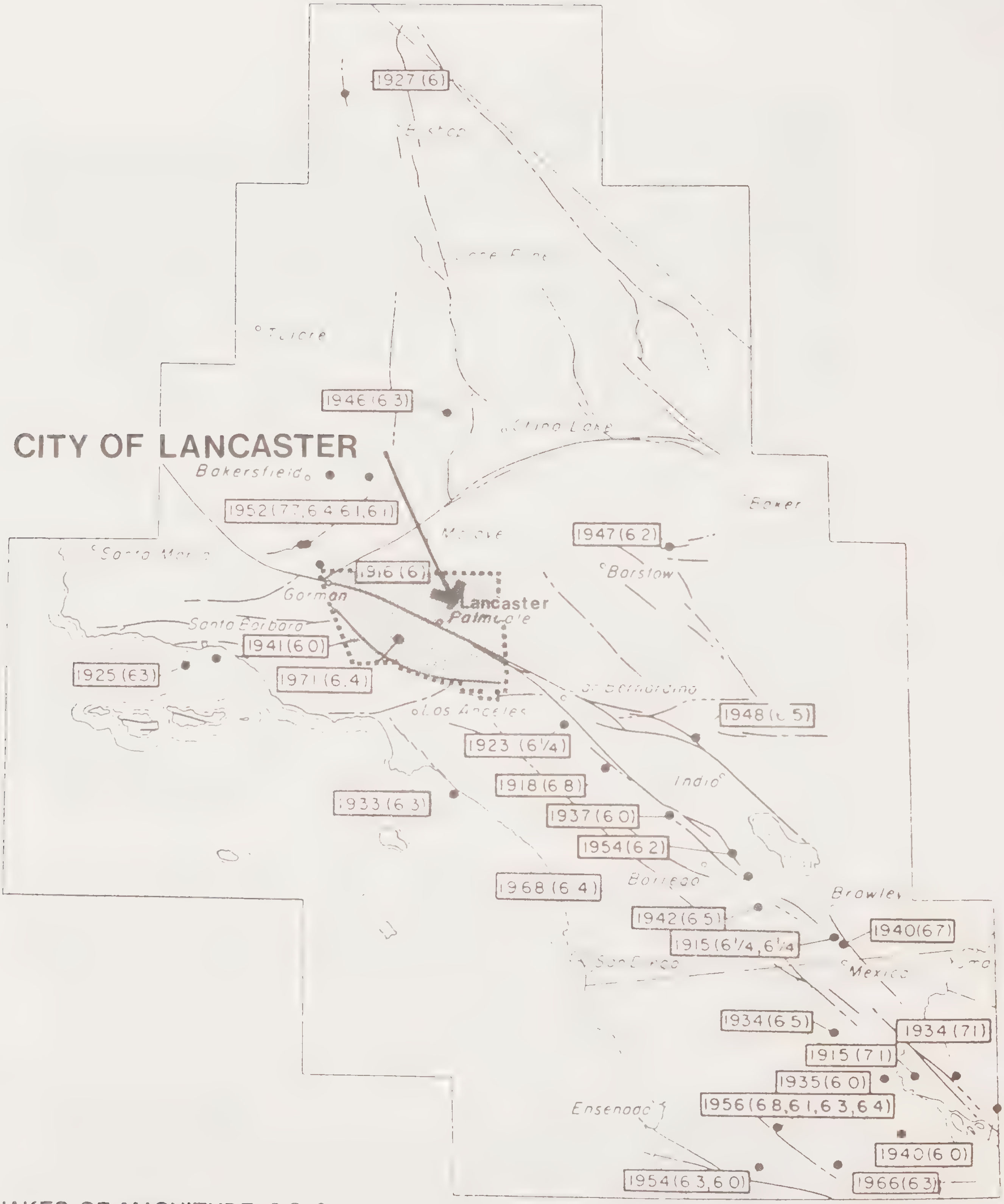
Seismic activity has long affected man, his activities, and the structures he has built -- particularly in seismically active regions such as California. The earliest and simplest method of estimating earthquake size was to record observed earthquake effects (e.g., hanging objects swing, or frame houses are moved off their foundations). From these observations, an earthquake intensity scale (Mercalli) was developed (see Table 6.2). Although this is a useful scale and can be roughly correlated with more quantitative measures, such as magnitude (Richter) and ground acceleration, the latter scales are generally utilized in evaluating earthquake shaking potential. Other important parameters are the length of time between motions and the elapsed time for all motions.

Since the initial earthquake shock originates deep within the bedrock, its outward propagation is governed primarily by the attenuation or energy-dissipating properties of the rock. The measured shock intensity decreases at a rate proportional to the distance from the source of the shock. Sites underlain by significant thicknesses of softer soil or alluvium, such as the City of Lancaster, however, will experience ground motion resulting not only from attenuation but also from amplification of certain shock-wave frequencies. This amplification tends to have a greater effect on tall buildings than on one or two story buildings in the same area, and is dependent on soil depth.

A listing of prominent earthquakes in California since 1769 is presented in Table 6.3. Earthquakes in Southern California that had a magnitude of 6.0 or greater are shown in Figure 2. Of these, only the San Andreas fault is of significance to the City of Lancaster.

a. Seismic Shaking Zones (I, II)

The City is included in two of the three basic seismic shaking zones. These zones are determined by three factors: distance from an active fault (San Andreas); the maximum earthquake that can be expected on that fault; and the underlying soil conditions. Zone I would be exposed to the highest seismic shaking intensities; Zone II, relatively lower; and Zone III, the lowest, is not in the City. These zones are shown on Figure 1, Faults/Seismic Zones.



EARTHQUAKES OF MAGNITUDE 6.0 & GREATER IN THE SOUTHERN CALIFORNIA REGION, 1912 – 1972, MODIFIED FROM HILEMAN, ALLEN & NORDQUIST (1973).

HISTORIC EARTHQUAKE EPICENTERS

Figure 2

TABLE 6.2

THE MERCALLI INTENSITY SCALE
(As modified by Charles F. Richter in 1956 and rearranged)

If most of these effects are observed	then the intensity is:
Earthquake shaking not felt. But people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	I
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	II
Effect on people: Felt by most people indoors. Some can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake. The shaking is like that caused by the passing of light trucks.	III
Other effects: Hanging objects swing. Structural effects: Windows or doors rattle. Wooden wails and frames creak.	IV
Effect on people: Felt by everyone indoors. Many estimate duration of shaking But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls. Other effects: Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Structural effects: Doors close, open or swing. Windows rattle.	V
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. Other effects: Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start, or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Structural effects: Weak plaster and Masonry D crack. Windows break. Doors close, open or swing.	VI
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. Other effects: Small church or school bells ring. Pictures thrown off walls, knicknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rattle. Structural effects: Masonry D damaged, some cracks in Masonry C. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets and architectural ornaments fall. Concrete irrigation ditches damaged.	VII
Effect on people: Difficult to stand. Shaking noticed by auto drivers. Other effects: Waves on ponds: water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. Structural effects: Masonry D heavily damaged; Masonry C damaged, partially collapses in some cases; some damage to Masonry B; none to Masonry A; Stucco and some masonry walls fall. Chimneys factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	VIII
Effect on people: General fright. People thrown to ground. Other effects: Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees. Structural effects: Masonry D destroyed. Masonry C heavily damaged, sometimes with complete collapse; Masonry B is seriously damaged. General damage to foundations. Frame structures, if not bolted down shifted off foundations. Frames racked Reservoirs seriously damaged. Underground pipes broken.	IX
Effect on people: General Panic. Other effects: Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed. Structural effects: Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.	X
Effect on people: General panic. Other effects: Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Structural effects: General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	
Effect on people: General panic. Other effects: Same as for Intensity X. Structural effects: Damage nearly total, the ultimate catastrophe.	XII

Masonry A	Good workmanship and mortar, reinforced designed to resist lateral courses.
Masonry B	Good workmanship and mortar, reinforced.
Masonry C	Good workmanship and mortar, unreinforced.
Masonry D	Good workmanship and mortar, and weak materials like adobe.

TABLE 6.3

PROMINENT EARTHQUAKES IN SOUTHERN CALIFORNIA[1]
1769 THROUGH SEPTEMBER 1971
(INTENSITY VIII AND ABOVE)

Date		Region	Richter Magnitude[2]	Modified Mercalli Intensity
28	Jul 1769	Los Angeles region		
8	Dec 1812	Southern California		VIII-IX
21	Dec 1812	Off coast of Southern California		X
10 or 11	Jul 1855	Los Angeles County		VIII
9	Jan 1857	Near Fort Tejon	Possibly 8	X-XI
4	Apr 1893	Northwest of Los Angeles		VIII-IX
22	Jul 1899	San Bernardino County		VIII
25	Dec 1899	San Jacinto-Hemet area		IX
27 and 31	Jul 1902	Santa Barbara County		VIII
18	Apr 1906	Brawley, Imperial Valley	6 to 6.9	VIII
22	Jun 1915	El Centro-Calexico-Mexacali area	6.25	VIII
21	Apr 1918	San Jacinto-Hemet area	6.8	IX
21	Jun 1920	Inglewood		VIII
29	Jun 1925	Santa Barbara area	6.3	VIII-IX
4	Nov 1927	West of Point Arguello	7.5	IX-X
25	Feb 1950	Westmoreland	5.0	VIII
1	Mar 1950	Brawley	4.5	VIII
10	Mar 1933	Near Long Beach	6.3	IX
18	May 1940	Imperial Valley	7.1	X
30	Jun 1941	Santa Barbara-Carpinteria area	5.9	VIII
29	Jul 1950	Imperial Valley	5.5	VIII
21	Jul 1952	Kern County	7.7	XI
22	Aug 1952	Bakersfield	5.8	VIII
25	Apr 1954	East of Watsonville	5.25	VIII
8	Apr 1968	Northeast of San Diego County	6.5	VII
9	Feb 1971	San Fernando	6.4	VIII-XI

(continued)

TABLE 6.3
(continued)

Notes:

[1] Source: California Geology, California Division of Mines and Geology.

[2] The Richter magnitude scale was not devised until 1931. If values appear in this column for earthquakes which occurred prior to that date, the magnitudes were determined as follows: 1) if given to the nearest tenth, the records of older instruments were correlated with records of instruments now in use; 2) otherwise, historical records of intensity were used to estimate magnitude.

Zone I could theoretically experience earthquake producing ground accelerations in bedrock exceeding .50 g (g represents the force of gravity), and Zone II between .40g and .50g. Corresponding modified Mercalli intensities for the zones would be roughly equivalent to the following ranges: IX to X for Zone I, and VIII to IX for Zone II. It is important to note that these are maximum values anticipated for the maximum credible earthquake. Their probability of occurrence must be evaluated, along with the site conditions and intended land usage, before values can be used for design or construction purposes. The following chart summarizes ground acceleration and modified Mercalli intensities for the zones.

Seismic Shaking Zone	Bedrock Accleration	Modified Mercalli Zone
Zone I	0.50g	IX to X
Zone II	0.50g-0.40g	VIII to IX

2.2.4 Liquefaction

Liquefaction, one of the most important secondary seismic hazards, can be described as a "quicksand" condition. A large area potentially subject to liquefaction is located in the northwestern part of the City. In liquefaction, a total loss of foundation support is caused by shock (usually an earthquake of significant magnitude). This condition is the result of a sudden decrease of shearing resistance in a cohesionless soil (such as sand), accompanied by a temporary increase in pore-water pressure.

Liquefaction Zone I and II

Identification of liquefaction zones is based primarily on the occurrence of groundwater (shallower than 30 feet from ground surface) in major alluvial deposits. Areas within Seismic Shaking Zone I have the highest liquefaction potential and are categorized as Liquefaction Zone I. The northwest portion of the City is located in this zone. Areas within Seismic Shaking Zones II and III are included in Liquefaction Zone II. A small area of the City is in Liquefaction Zone II. It is east of the Antelope Freeway, west of Sierra Highway, and adjacent to Avenue H. Liquefaction zones are shown on Figure 2.1, Faults/Seismic Zones.

It was not within the scope of the current study to evaluate soil type. Therefore, because of a general lack of data on sub-surface soil conditions, the factor of soil type was not included in the liquefaction analysis. Thus, it should be assumed, due to soil differences, that all areas within a given zone will not have equal liquefaction potential. However, in comparing a random site in Zone I with a random site in Zone II, it would be reasonable to expect the liquefaction potential in Zone I to be higher than in Zone II a majority of the time.

The zones are not an absolute measure of liquefaction potential. They are instead a relative, broad-scale rating to be used in comparing large areas for planning purposes. A more definitive liquefaction evaluation of a specific site would require an in-depth analysis of all controlling factors.

For vital facilities, such as hospitals, the Veterans Administration has established certain criteria for determining whether liquefaction investigations should be required. Sites requiring detailed study are:

(1) Sites with anticipated earthquake intensities of Modified Mercalli VII or greater.

(2) Subsoils with saturated fine sand layers, with 50 percent or more of grain size less than two millimeters, at a depth of 45 feet or less.

(3) Subsoils having relative densities of 40 percent or less, with a Modified Mercalli VII or greater earthquake intensity -- or a relative density of less than 75 percent or less, with a Modified Mercalli IX or greater earthquake intensity.

Similar guidelines should be considered for adoption for important, high-cost, or vital structures.

2.2.5 Other Secondary Hazards

a. Seismically-Induced Settlement - In the absence of a shallow water table, settlement can still occur to some degree if soil conditions are otherwise ideal for liquefaction, as is the case in portions of Lancaster. This settlement depends on both the intensity of shaking and the looseness of the soil. Such a compacting process would damage structures only if there were different amounts of settlement within a short distance.

Evaluating the settlement potential from the data available is not considered feasible. However, this type of settlement would be limited to those areas underlain by alluvial deposits and would be most likely to occur within Seismic Shaking Zone I. Within the City of Lancaster this would affect the area south of the Seismic Shaking Zone I on Figure 2.1.

b. Shattered Ridge Phenomena - This is the intense ground breakage ("tossed earth"), cracking, and fissuring that is believed to result from the convergence of seismic energy along the crest of ridges. This does not occur within the Lancaster city limits, and may occur in the few ridges within the planning area.

c. Seismically-Induced Landsliding - Although the City of Lancaster is free from this hazard, the planning area includes slopes that could be a hazard if affected by a significant local earthquake.

3.0 Issues

Definition of Risk

Three basic categories of risk are as follows:

1. Acceptable Risk - The acceptable risk category includes hazards in which the threat to life or property is not severe enough to require specific action by government. "Tolerated Risk" has been suggested as another name for this category.

2. Unacceptable Risk - This category includes hazards in which the dangers to life and property are serious enough to warrant specific government action. Unacceptable risks also include all situations where there is no effective regulatory control to investigate and monitor the hazard.

3. Avoidable Risk - Avoidable risks are hazards in which the danger may be reduced by establishing policies that physically avoid, or at least mitigate, the risk. This category includes all situations in which a risk can clearly be lessened by careful structuring of a project.

3.1 Issue One: Protection of Existing Population and Development

3.1.1 Earthquake-Hazardous Buildings, High-Rise and Critical-Use Structures

Of primary concern in evaluating seismic hazards is the identification of buildings likely to suffer significant damage during a strong earthquake. Many of these are old buildings, others are critical-use structures located in active or potentially active fault zones.

In the City, the most significant critical-use structure located near an active fault zone is the Antelope Valley Hospital. The hospital, located at 15th Street West and Avenue J has beds and offers medical and surgical care and emergency room service.

3.1.2 Dam Safety

The seismic safety of dams relates to the possible failure of a dam during an earthquake. This can result from ground rupture if the fault passes beneath the dam, as with Harold Reservoir, or from ground shaking caused by

the earthquake. Secondary seismic phenomena such as landsliding, seiching, or liquefaction can also lead to dam failure. (Refer to Table 6.4 for a tabulation of the three dams which drain toward the City and its planning area.

Of particular note are two dams -- Fairmont and Littlerock -- which have restrictions for maximum water level height for safety reasons. Although no comprehensive analyses of the seismic safety of these dams has been made, an investigation program by the State Division of Dam Safety has been started. Completion of the program is expected to take several years. Each of these dams could cause flooding in Lancaster in the unlikely event of a sudden and total failure that releases a full reservoir.

Fairmont Buttes probably would drain in an easterly direction along Avenues H and I. Flood waters would then collect and drain north to Edwards Dry Lake.

Littlerock Dam would drain in a northerly direction through the communities of Littlerock and Sun Village, and continue northerly on the east side of 50th Street East.

Harold Reservoir would drain in a localized area surrounding the site and could also spill northerly into Palmdale, across the PMD site and northerly through Lancaster along 30th Street East and 40th Street East.

First priority dams (because they are believed to be the most hazardous) are hydraulic fills (such as Fairmont Dam) and other dams that are vulnerable because of age, type of construction, or condition. Dams close to active or potentially active fault zones should also be given a high priority. As required by State law, the Office of Emergency Services is currently preparing maps to specifically delineate areas that would be inundated as a result of dam failure.

Inundation area maps required by the State will not take into account the relative probability of dam failure. Thus, it should not be assumed that all areas will be equally hazardous or unsuitable. However, until definitive studies of each dam are available, it would be prudent to limit inundation areas immediately downstream of those dams of questionable seismic safety to less intensive land uses (e.g., parks, golf courses, agriculture).

TABLE 6.4

DAMS IN THE VICINITY OF THE CITY OF LANCASTER

Name of Dam	Dam No.	Name of Owner	Stream	Location Sec	T	R	Type	Storage Capacity (Ac-Ft)	Drainage Area (mi^2)	Reservoir Area (Ac)	Crest Elev.	Crest Length	Height	Perm Spwy	Maximum Operat. Level	Crest Th.	Dam Volume (ft^3)	Year Completed
Fairmont[1]	6-8	City of L.A.	Antelope Valley	12	7N	15W	HYDF	7,507	2.60	172	3,043	4,300	121	9.0	-	16	696,000	1912
Harold Reser-voir	57-2	Palmdale Irrig. Dist.	Tr. An-telope Valley	3	5N	12W	ERTH	4,200	4.90	288	2,824	2,800	30	11.5	-	10		1891
Little-rock[2]	57-	Little-rock Palmdale ID	Little Rock Creek	27	5N	11W	MULA	4,300	64.00	104	3,264	576	124	14.0	-	-	25,200	1924

The following footnotes indicate at what point below spillway level the dam is to be filled for the maximum safety level:

1) 14 feet.

2) 22 feet.

Source: Department of Water Resources, Bulletin No. 17-74, "Dams within the Jurisdiction of the State of California", May 1974.

In the hazard rating of such potential inundation areas, higher hazard rating would not logically be justified for those areas than the rating given for a major floodplain without a dam (or upstream of a dam). The purpose in limiting development in the inundation areas is to make certain that no hazard exists before future urban growth is encouraged.

3.1.3 Linear Systems (Roads, Utilities and Pipelines)

Damage to utilities caused by earthquakes could have a serious effect on the population even beyond the primary-impact areas. Vital support services that could be affected include: water, gas, and electrical power supplies; communication; transportation; sewage disposal; and storm drainage.

The most obvious corridor is the State Aqueduct which lies directly atop the San Andreas Fault as it passes through the Antelope Valley and the planning area of the City of Lancaster. The aqueduct, however, was designed with consideration of potential seismic acitivity, and contains safety devices to prevent extensive water loss.

3.1.4 School Safety

The 1933 Long Beach earthquake resulted in passage of the Field Act, which established minimum earthquake safety standards for construction of public school facilities. Under the provision of this Act, as well as more recent legislation, schools not meeting minimum standards by 1977 are prohibited from further use unless rehabilitated or replaced.

3.2 Issue Two: Seismic Consideration for Future Development

3.2.1 Seismic Hazard Zone

The Alquist-Priolo Special Studies Zones Act designates major active or potentially active fault zones. There are no major active or potentially active fault zones in the City of Lancaster. The San Andreas Fault Zone in the southwest of the City's planning area is the nearest fault to the City. Establishment of a special studies zones is a long-term program in which the active faults will be investigated first, followed by those considered potentially active. Thus far, only the San Andreas Fault Zone has been investigated under the Act in Southern California.

3.2.2 Seismic Shaking Zones

These zones, as shown on Figure 1, were determined by the relative intensity of seismic shaking that could be expected to result from an earthquake on the San Andreas Fault. Because it is the only known active fault, it is the most probable source of a major earthquake affecting the City.

The use of these zones is considered to be valid for evaluating the suitability of most land uses, except for the most important or critical. Delineation of these zones is not intended for use in defining seismic design criteria, although there is a general correlation between these zones and the increasing ranges of anticipated ground acceleration.

Seismic shaking zones for the City are, in effect, a refinement of the national seismic zonation used for the Uniform Building Code (which includes all of California in Zone III, the high-risk zone). It must be remembered, however, that seismic response for a given site will depend on whether it is underlain by bedrock or by alluvium (as is Lancaster), and on the general level of shaking intensity.

4.0 Policies

Goals have been established for this Element as the result of an analysis of seismic information. Because goals are broad statements that reflect the aspirations and values of society, they are subject to change from time to time. It has been the intent of this planning effort, however, to formulate goals that will provide continuing guidance to decision-makers by responding to both present and anticipated needs.

4.1 Goals

It is the objective of the Seismic Safety Element to encourage attainment of the following goals related to future seismic events in the City.

1. Reduce loss of life, bodily injury, and property damage.

2. Reduce economic and social dislocations.

4.2 Policies

Policies for the Seismic Safety Element provide direction for the achievement of Element goals. These policies will be carried out through implementation programs utilizing public and private resources for the mitigation of earthquake hazards.

In the process of formulating these policies, several alternative policy sets were considered. These alternatives reflected various courses of action ranging from limited government involvement in seismic safety to aggressive programs for the abatement of earthquake hazards. From this range of alternatives, a preferred set of policies was selected. This policy set was chosen for its potential effectiveness in achieving Element goals, as well as its social, political, and economic feasibility.

Recommended policies are set forth in the following sections.

It shall be the policy of the City of Lancaster to:

General Policies Related to Both Issues

1. Establish and enforce standards and criteria to reduce unacceptable levels of seismic risk.

2. Require that all new developments and existing public facilities comply with established seismic safety standards.

3. Adopt and enforce selective land use and building regulations in areas of high seismic hazard.

4. Review and improve seismic site design and construction requirements for vital facilities and upgrade those not meeting current earthquake-resistance standards.

5. Advocate improved seismic safety programs for schools.

6. Improve seismic design and construction standards for facitilities housing depending populations.

7. Establish programs to provide for the needs of affected populations in earthquake response and recovery operations.

8. Advocate detailed site evaluations and improved seismic design and construction standards for linear system nodal facilities (e.g., power distribution stations).

9. Advocate improved earthquake insurance programs.

10. Encourage research on the relationship between geologic conditions and the risks associated with earthquakes.

11. Develop greater public awareness and understanding of potential seismic risks.

12. Improve governmental cooperation and communication by providing active leadership in the field of seismic safety planning.

Issue One: Protection of Existing Population and Development

1. Review earthquake resistance of dams and strengthen these where necessary to meet State standards.

2. Evaluate seismic vulnerability of facilities that manufacture, process, handle, or store dangerous materials (such as explosives, flammable, or toxic materials).

3. Reduce risks associated with hazardous old buildings through action programs, including but not limited to renovation, occupancy reduction, and selective demolition.

4. Provide relocation assistance to persons and businesses temporarily or permanently dislocated from hazardous old buildings due to action by the City.

5. Improve current disaster response programs and inter-jurisdictional coordination.

Issue Two: Seismic Hazards for Future Development

1. Require that new construction be designed to withstand the ground shaking expected for Seismic Zone I.

2. Require that new critical-use facilities be designed with substantial seismic consideration for Seismic Zone I, and with full thought to their regional significance.

5.0 Implementation

While the identification of hazards and the statement of policies are vital aspects of the Element, they are useful only if these policies can be successfully implemented. Following is an integrated set of recommended actions for implementing this plan. These actions relate to: existing programs; strategy options; major land-use concerns; and specific land-use planning and development control implications.

5.1 Hazard Reduction Strategies

Methods of mitigating the effects of earthquakes fall into three basic categories:

a. Hazard Abatement - This is the most positive method of hazard reduction, but it also is the most controversial because it involves the elimination of an existing hazard, usually at a substantial cost to the owner. Demolition of old earthquake-vulnerable buildings is an example of the hazard abatement. Possible relocation requirements caused by this strategy can have a significant negative social impact.

b. Impact Reduction - This strategy involves the use of measures that would minimize the adverse effects of future earthquakes. It includes both reactive efforts (i.e., emergency or contingency plans after a disaster) and standards for construction.

c. Hazard Avoidance - Most important at the land-use planning level is the strategy of avoidance. Advanced knowledge of the types and severity of hazards within a planning area makes it possible to identify land uses that would be most compatible with the risk. Thus, areas of unacceptable risk can be avoided, or they can be utilized only for limited types of land use.

While abatement and avoidance strategies have traditionally played subordinate roles to the impact reduction strategy, they are deserving of more attention. Most significant in the current and long-range planning of the City is the avoidance of strategy. This strategy relies primarily on preventative or avoidance measures, such as restrictive zoning, designation of special study zones in high hazard areas, and adequate building set-backs.

5.2 Setting Priorities

The following criteria should be used to establish priorities so that judgments can be made regarding allocation of

limited funds to the most critical areas or problems. In order of importance, these criteria are:

a. Significant and impending threats to human life or safety.

b. Unacceptable levels of potential economic loss.

c. Potential for widespread social disruption.

d. Significant threats to future population or development.

e. Problems that are not likely to result in loss of life, property damage, or social disruption.

5.3 Priority Action Categories

Based on the foregoing criteria, priority action categories for Lancaster were established. In descending order of importance, they are:

a. Vital or critical-use structures.

b. Protection of future growth and development.

c. Emergency preparedness.

d. Earthquake-hazardous old buildings.

e. Concentrations of dependent populations.

f. Dams in the vicinity of existing urban areas.

g. Facilities that process, manufacture, or store dangerous (toxic, flammable or explosive) chemicals or materials.

5.4 Specific Programs

5.4.1 Vital or Critical-Use Structures

a. The City Engineer should identify and evaluate hospitals and police and fire facilities not meeting current seismic site, design, and construction standards in the area.

b. The City should consider the inclusion of additional important or critical-use structures in Facilities Vital in Emergencies (Subsection 2314 of the Building Code). Such additional structures should include, among others, schools, high-rise building (or other high-cost, high-occupancy facilities), power systems (e.g., electrical stations), and plants that manufacture or handle dangerous products.

c. The Lancaster City Council should advocate and support adoption of State legislation requiring improved site design and construction standards for emergency service facilities, such as fire and police facilities, emergency operations control centers, and emergency communication centers.

d. The Building Section should use as a guideline the seismic zones and attendant response spectra for modification of the City Building Code to bring it into conformance with expected seismic conditions resulting from future earthquakes.

e. All critical facilities constructed prior to 1948 should be reviewed by a structural engineer for potential hazards. Since many of these structures have regional impact, the source of funding for the inspection program ought to be at the regional level.

f. Advocate detailed site evaluations and improved seismic design in construction standards for those linear systems essential to the provision of critical services (i.e., water supply, roadways, power, communication, etc.).

g. Review and improve seismic site design and construction requirements for vital facilities and selected facilities where needed to meet current earthquake resistant standards.

h. Require the upgrading or demolition of all critical care and educational facilities found to be in non-compliance with seismic design standards.

i. Solicit funding as available from federal and state sources to accomplish the above.

j. The City Council should advocate and support re-introduction of State legislation that would require all existing emergency service facilities to comply with modern seismic design and construction standards.

k. The City Council should encourage the State Public Utilities Commission to establish adequate seismic design and construction standards for utility systems.

5.4.2 Protection of Future Development

a. Establish and enforce design standards and criteria (e.g., micronization study) to reduce seismic risk.

b. Require all new development and selected classes of existing development to meet established seismic safety standards.

c. Make available to builders, realtors, and other interested parties findings of the Seismic Safety Element.

d. By resolution, the City Council should advocate and support re-introduction of State legislation that would require rural facilities to comply with modern seismic design and construction standards.

e. The City Engineer should evaluate the applicability of Ordinance No. 10717 (effective August 24, 1973) to the City. This ordinance, which revises the earlier edition of the Uniform Building Code (UBC) was established to provide greater earthquake safety. However, the revised Code (similar to the 1973 UBC) recognizes only one seismic shaking intensity zone for the area (the same intensity that is recognized for the entire State of California).

f. The City should include considerations of seismic and geologic hazards in its zoning ordinance. Land use allocations should be compatible with the various degrees and types of geologic and seismic risk in the City.

g. The City Council should encourage the expansion of functions of the County's Engineering Geology Section to include:

(1) Research, evaluation, and mapping of general geologic and seismic conditions within the area.

(2) Geologic and seismic safety review procedures for zoning, subdivision, and major building permit requests.

h. By resolution, the City Council should advocate and support:

(1) A requirement of geologic reports on seismic hazards (differential subsidence) to be submitted for development proposals within special study zones.

(2) Increased geologic and seismic research and mapping at the County, State and Federal levels.

(3) State legislation providing reduced tax assessment for properties subject to geologic hazard.

i. In cooperation with the U.S. Geologic Survey and the California State Division of Mines and Geology, geologic mapping programs for the hill areas in the City's planning area should be accelerated.

j. The U.S. Geological Survey and the California Institute of Technology should be supported in on-going and future seismic instruementation programs. These programs include:

(1) U.S.G.S., Vertical Performation Control Program sprint leveling of existing vertical control network.

(2) U.S.G.S., Gravity Survey Program (needed for more precise location of concealed major faults).

(3) U.S.G.S. and C.I.T., Strain Monitoring Program along active faults (needed to determine more accurately the state of activity of faults).

(4) U.S.G.S., C.I.T., U.S.C., Seismoscope and Strong Motion Instrumentation Program (an accelerated effort must be made to place seismic recording instruments on various soil rock types for a better understanding of earthquake effects).

k. A program to effectively lower the groundwater in the potential liquefaction areas to at least 30 feet below the surface should be evaluated as to feasibility.

5.4.3 Emergency Preparedness

a. Community programs that train volunteers to assist police, fire, and civil defense personnel how to perform

effectively after an earthquake should be supported.

b. Legislation requiring regular earthquake disaster drills in all public and private elementary, intermediate, and secondary schools should be sponsored. Drills should include student evacuation and on-campus supervision, and they should be augmented by a community awareness campaign emphasizing how, when, and where children would be reunited with their parents.

c. The City Council should support the addition of a mandatory earthquake-hazards education program to the State-required school curricula.

d. An ordinance should require the preparation of emergency-response plans for facilities housing dependent populations.

e. The City Council should authorize the necessary staff and funding to coordinate with the County Disaster Services Coordinator in order to continually review and update inter-agency disaster response plans.

f. The City Council should request the Board of Supervisors to expand the function of the County Disaster Services Section to provide greater coordination between local, State and Federal jurisdictions, as well as other disaster-response organizations, such as the American Red Cross.

g. The City should prepare contingency plans for the provision of emergency water supplies and sanitary facilities in the Lancaster area.

h. The City, in cooperation with the County, should advocate the preparation of guidelines for disaster-response and recovery operations. These guidelines, which should be undertaken by the Public Utilities Commission in cooperation with the County and utility companies, would establish priorities, areas of responsibility, and provision for mutual assistance agreements.

i. The appropriate departments should organize and conduct periodic earthquake disaster drills. These drills would be carried out in cooperation with the County and other involved jurisdictions and agencies.

j. The City Council should authorize an investigation to determine the feasibility of a computerized disaster-response program similar to the Federally-sponsored Firescope Program.

k. Upon adoption of this Element, the City should establish a Seismic Safety Review Committee to oversee the implementation of this Element. This committee should be composed of the Director of Planning, the Superintendent of Buildings, and at least one representative from each of police and fire protection service agencies.

l. The Seismic Safety Element should be reviewed by the City Planning Division annually and should be comprehensively revised every five years or whenever substantially new scientific evidence becomes available.

5.4.4 Earthquake Hazardous Buildings

a. Encourage the establishment of educational programs to inform property owners and residents of seismic hazards in the City of Lancaster.

b. Conduct a survey to identify all non-residential structures which do not conform to current seismic design standards.

c. Encourage the reduction of risks associated with hazardous buildings through such mechanisms as renovation, occupancy reduction and selective demolition.

d. Legislation that would provide State financial assistance to privately owned hospitals should be sponsored so that inadequately-designed and constructed facilities can be strengthened to resist earthquake impacts.

e. Public Health and Safety Codes should be revised to authorize the County Engineer to conduct an investigation of potentially hazardous buildings.

f. The City Engineer should be given the authority to:

(1) Conduct an inventory and selective evaluation of potentially hazardous buildings in high seismic shaking zones in the City.

(2) Identify building occupancy type, value, and age.

(3) Establish priorities for the renovation, demolition, or occupancy reduction of identified hazardous buildings.

g. State legislation should be sponsored to provide income tax incentives for repair or demolition of earthquake-hazardous buildings.

h. The appropriate City department should identify the provisions of State and Federal tax laws that enable hazardous old buildings to function as tax shelters.

i. The City should take advantage of State and Federal relocation assistance programs to assist persons and businesses displaced from hazardous old buildings.

j. The City should work closely with insurance company representatives in developing improved earthquake insurance programs.

k. A phased program for demolition of hazardous buildings should be developed and implemented for those buildings where other risk reduction measures are not feasible.

l. Present seismic study findings using slide presentations and workshop meetings to schools, agencies related to aged, handicapped, etc., and seismically susceptible industries.

m. Establish appropriate media for reaching different segments of County communities (Spanish-speaking) and conduct presentations.

n. Present findings to appropriate civic groups.

o. Encourage State, Federal, and other governmental agencies to intensify research on seismic and other geologic hazards.

p. A program of building inspection should be initiated to identify all structures in the City that do not meet modern earthquake standards for construction and conform to design criteria of the modified City Building Code.

q. The Building Section should establish and implement a program for the orderly elimination of hazardous buildings.

5.4.5 Concentrations of Dependent Populations

a. The City Council should advocate and support legislation that would expand and finance provisions of the Field Act to include private facilities.

b. The City Engineer should review current building code requirements for facilities housing dependent populations in the City. Code requirements should be improved where needed.

5.4.6 <u>Dams in the Vicinity of Existing Urban Areas</u>

a. The California Department of Water Resources should review the Seismic Safety Element and forward comments regarding dams and the aqueduct to the City Planning Director.

b. The City Engineer whould maintain contact with the Office of Emergency Services and obtain accurate inundation maps as soon as they become available.

5.4.7 <u>Facilities that Process, Manufacture or Store Dangerous (Toxic, Flammable or Explosive) Chemicals or Materials</u>

a. An ordinance should be adopted defining hazardous industries or facilities subject to serious accidents resulting from strong earthquakes.

b. The City Council should authorize the appropriate agency to conduct a survey to evaluate potential hazards and to recommend guidelines or procedures for the safe handling, processing, manufacture or storage of dangerous materials. Special studies should be made for industries and facilities in this category that will serve the proposed Palmdale International Airport.

c. Adequate authority should be established to inspect such facilities and to enforce adopted regulations.

7. Public Safety Element

1.0 Introduction

The purpose of the Public Safety Element is to introduce safety considerations in the planning process. Policies recommended in this Element would reduce loss of life, injuries, and damage to property, as well as economic and social dislocations that result from fire and geologic hazards.

The Public Safety Element establishes broad policy statements and programs that are intended to serve the policy makers as well as the residents. It is a general statement of problems and offers potential solutions. The specific responses to these problems are left to the government and to individual citizens to implement in ways that are seen to be efficient and effective.

This report has been prepared under the provision of Government Code Section 65302.1, which requires a safety element in all city general plans.

Major areas of concern in this Element are:

1. Brush Fire Hazards - Dangerous situations resulting from fire in brush covered environments (natural or man-made), including potential impacts due to erosion.

2. Urban Fire Hazards - Dangerous situations resulting from fire in residential, commercial, and industrial facilities, caused by structural conditions, accidents, or maliciousness.

3. Geologic Hazards - Geologic activity (other than seismic events) that threatens the safety and welfare of citizens, such as slope instability, subsidence, differential settling, erosion, and other bedrock or soil-related problems.

Two additional areas of concern have been suggested by the California Office of Planning and Research for inclusion in the Safety Element. The first is flood hazards, and the second, crime-prevention aspects of land use development, such as defensible space.

Flood hazards are discussed in the Environmental Resources Management Elements and, therefore, will not be considered in this Element.

The concept of defensible space is a relatively new approach to the problem of crime prevention. It is based on the use of physical

planning and structural design as a deterrent to crime at the community level. As yet, this concept has not been developed to the level of preciseness that would allow for clear and direct land use policies directed at crime prevention. The most important findings relate to street lighting.

To respond to civil disobedience, earthquakes, and other emergency situations, the City has adopted a Community Emergency Preparedness Program.

2.0 Existing Conditions

2.1 Urban Fire Hazards

2.1.1 Fire-Hazardous Buildings

A fire-hazardous building is a structure which upon ignition will permit rapid internal spread of fire. Fire-hazardous buildings are characterized by open stairwells, obsolete heating and ventilation systems, and worn or substandard wiring. Combined with flammable furnishings, combustible interior construction and wood exteriors, these buildings permit human carelessness or maliciousness to cause disaster.

Often, fire-hazardous buildings are older structures that provide low-cost housing for the poor or the elderly. Older buildings also house a variety of commercial and light-industrial enterprises.

Clusters of fire-hazardous buildings pose a serious threat to life and property. The social and economic cost required to lessen the potential threat of fire-hazardous structures, however, is enormous. Complex issues must be studied, including: occupant safety and welfare, equitable financial treatment of building owners, relocation of existing occupants, minimization of adverse effects on the general business community, and preservation of an adequate community tax base.

2.1.2 Residential Fires

Residential fires occur for a variety of reasons, many of which involve human factors, such as accidents associated with cooking, heating, smoking, and matches. Although residential fires typically involve single dwellings or buildings, there is always the danger that these fires could spread out of control over a large area, particularly in residential areas utilizing untreated wood-shingle roofs and wood exteriors.

2.1.3 Indoor Public Assembly Facilities

In this Element, the term "indoor public assembly facility" refers to all indoor facilities where large groups of people are gathered in generally unfamiliar surroundings. Such facilities include entertainment and recreational

establishments, as well as public and semi-public institutions. Examples of this type of indoor facility are found in Lancaster and are: churches, movie theaters, bars and restaurants. Some of these buildings may not conform to current fire regulations since they were either built prior to present-day codes or were not covered by the retroactive requirements of State codes. Older buildings with wiring that was installed according to former building codes comply with State and City laws, but would not be considered adequate if they were measured by present building standards.

The one characteristic shared by all public assembly facilities is the concentration of large groups of people. This common characteristic provides a potential for mass panic response in a crisis situation. A response of this nature during a fire can ultimately cause more casulaties than the fire itself. Unfamiliar surroundings, lack of knowledge concerning exit routes, and loss of orientation heighten the fire disaster potential.

Another potential problem caused by intense concentrations of people is the provision of medical aid during and after a fire. The extensive damage and injury a fire can cause in these circumstances makes it difficult to provide the required aid. This problem has been recognized by many emergency response agencies, and mock disaster drills have been carried out in an attempt to familiarize and train response personnel.

2.1.4 Schools

Improvements in the design and construction of new schools, as well as modifications to existing schools, can provide a reasonable degree of safety. Removal of buildings that cannot be brought up to minimum requirements, in addition to an aggressive fire safety inspection program, can also help to eliminate fire hazards in schools.

Most accidential fires that occur in schools do not involve the structure, and, therefore, most losses are relatively small. However, major losses can result from fires caused by vandalism during periods in which schools are not occupied. Such fires invariably reach significant size before discovery. Some school districts have employed guards or installed fire detection devices, automatic fire sprinkler protection, sensors, and burglar alarms to combat this problem. Although this is more typically an inner city problem, vandalism can occur in Lancaster, and, therefore, the City can monitor this problem and establish a course of action should it become appropriate.

2.1.5 Industrial Fire Hazards

Of particular concern to the Lancaster area is the potential fire hazard resulting from the production of the multitude of products related to the aerospace industry. Few facilities of this nature are in Lancaster, and where present, they often provide extensive on-site fire protection.

Transportation, manufacturing, and storage of volatile products present additional fire hazards. Transporting these materials over public roads and private railroads exposes a portion of the public to possible injury or loss of life as a result of accidents involving the transporting vehicle.

Should Palmdale International Airport be developed, new industries will relocate to the area.

These industrial processes and the development of new fuels, plastics, and chemicals require continuous upgrading of fire-control technology and contingency planning by industry in coordination with the City. These efforts are directly related to the physical and economic well-being of industries and industrial employees, as well as the general public.

2.2 Brush Fire Hazards

Since 1913, when records were established, the City of Lancaster and its planning area have experienced a number of significant grassland and weed fires. Foothill areas of the City's planning area, in the southwest, have been subject to the brush and forest fires that periodically plague the Sierra Pelona and San Gabriel Mountain ranges.

Brush fires are caused by the proper combination of vegetation, climate, slope, and people. In the City, the warm, dry climate causes brush growth on vacant parcels. When the growth dies off in the summer heat, and in combination with windblown tumbleweeds, these lots can be a fire hazard to neighboring property. Although these fires consume small acreage, they represent the most significant brush fire hazard to the City residents.

Table 7.1 presents relative combustibility of common Lancaster area vegetative communities. As this table illustrates, chaparral, sage, grassland, and other native plant life provide the major source of fire fule. They are a naturally occurring part of the environment. Over countless generations, they have adapted to the climate of the region and formed what is known as a fire climax cycle. Simply stated, this means that the plants are not totally destroyed by a fire, and are capable of regeneration. Thus, the fuel problem will be a persistent challenge.

An equally persistent problem is man's tendency to expand an urban lifestyle into brush areas. This often disturbs a vegetation climax area that can be relatively free from fire, by disturbing the soil and causing an outgrowth of grasses and sagebrush. These are natural ways in which the area regenerates. In Lancaster, these areas become a hazard when man maliciously or inadvertently starts a fire. Neighboring wood frame homes or homes with wood shake roofs are endangered.

The four factors -- slope, man, vegetation, and climate -- were analyzed to predict areas of relative fire hazard. In comparison to the North Los Angeles County region, Lancaster has a low brush fire hazard potential. Within the City limits, only a small area between 30th Street West and 40th Street West at Avenue K are of medium fire hazard. This is because of the grassland and sagebrush problems discussed above.

TABLE 7.1

RELATIVE EASE OF IGNITION OF VEGETATION TYPES[1]

HIGH[2]

Chamise Chapparal
Chaparral (Manzanita)
Coastal Sage Scrub
Woodland Grass

MEDIUM[2]

Limber Pine
Pine Belt
Miscellaneous Conifers
Sub-Alpine Forest
Southern Oak Woodland
Pinyon-Juniper
Semi- desert Chaparral

LOW[2]

Joshua Tree Woodland
Creosote Bush Scrub
Shadscale Scrub
Riparian Woodland

---

[1]Source: Envicom, Inc.

[2]Plant species within each combustibility group are of relatively equal combustibility.

2.3 Geologic Hazards

Foremost among the geologic concerns in the planning area in terms of damage to developed properties is the presence of soils or formations that have a propensity for settlement and/or hydrocompaction. Other soil-related phenomena, such as subsidence, shrink/swell, and percolation characteristics, and erodibility are less problematic, but, nonetheless, they have land use implications. These environmental features are considered here and are also discussed in greater detail in the Environmental Resources Management Element of this plan.

2.3.1 Soil-Related Hazards

Identification and delineation of soil-related hazards are based on detailed mapping of near-surface soils (at a scale of 1" = 2,000') that was prepared by the U.S. Soil Conservation Services (S.C.S.) for the Lancaster and greater Antelope Valley area. Soils are formed by the interaction of moisture, wind, and plant and animal life and are deposited above the structural geologic formations. Soil is not a lifeless, unchanging layer, but soil formation is a continuing, dynamic process influenced by climate, landform, and vegetation changes. Comprising surface soils are mineral and organic particles, while the underlying material usually is all mineral matter.

The soils of Lancaster and its planning area have resulted from the violent uplift of the Sierra Pelona and San Gabriel Mountains and their subsequent erosion. These alluvial deposits consist of coarse-grained sediment intermingled with organic matter close to the foothills, in the City's planning area, and depositions of finger-grained silts and clays in areas away from the mountains in the City's corporate area. Generally, the area north of Avenue J, east of 60th Street West, and west of 50th Street West is characterized by its very poor soil.

Concerns associated with the soil types found in Lancaster and its planning area include its 1) shrink-swell potential, 2) erosion hazard, 3) limitations on septic tanks, 4) subsidence, and 5) hydrocompaction capability.

a. Shrink-Swell Potential

Shrink-swell potential of soils is defined as the relative measure of the propensity of the soil to swell when wet and shrink when dry. The amount of swell is related primarily to the presence and amount of certain types of clay. Three ranges of shrink-swell potential have been delineated by the S.C.S. -- low, moderate and

high -- and are depicted on Figure 1. Highly expansive soils can cause substantial damage to building foundations, highways and other surface structures. However, these effects can be minimized or eliminated (particularly, in areas of moderate shrink-swell) provided that structures are engineered in accordance with existing building code requirements. Construction costs, consequently, will be higher in such areas.

Most of the City of Lancaster is characterized by soils of low shrink-swell potential that do not represent a problem for foundation construction. However, the soils of much of the area north of Lancaster Boulevard and west of 10th Street West are classified as highly expansive and warrant special design considerations.

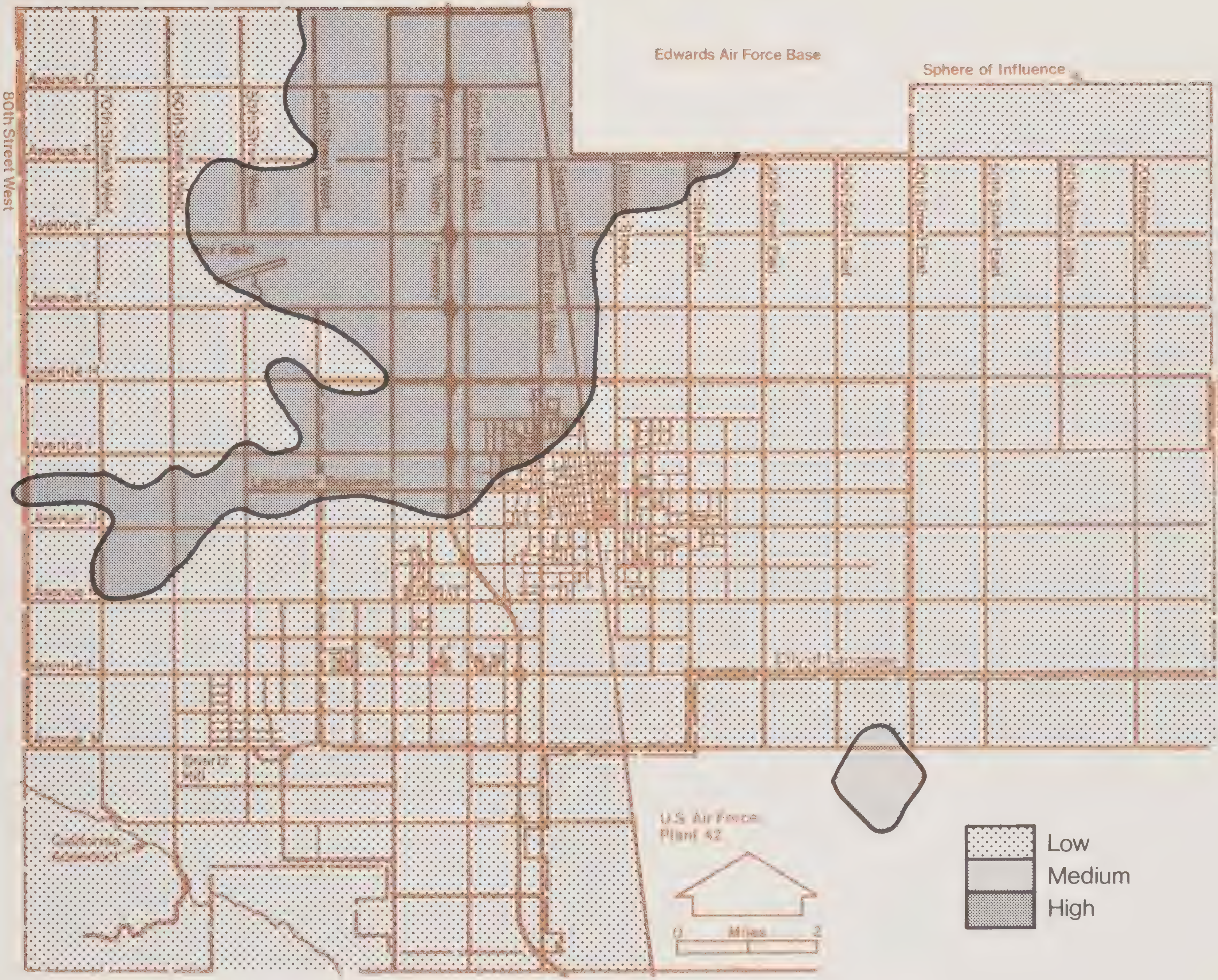
Shrink-swell conditions in the City's planning area are similar to those within the corporate limits. Most areas exhibit low potential. High shrink-swell potential is found in the area generally between Avenue I to Avenue J to 75th Street West and north of the City between 40th Street West and Sierra Highway.

b. Soil Erosion Hazard

Land erosion is the process by which soil is removed from one area and transported to other areas, primarily by wind and moving water. Depending upon soil composition and consolidation, certain soil types will be more prone to erosion (such as formation of rills, gullies, and canyons) than other soil types. Evaluating erosion potential is important in determining hazards to existing and proposed development, as well as costs that would result from corrective measures. Four classifications of erosibility have been defined by the S.C.S. (none to slight, moderate, high and very high) and are illustrated on Figure 2.

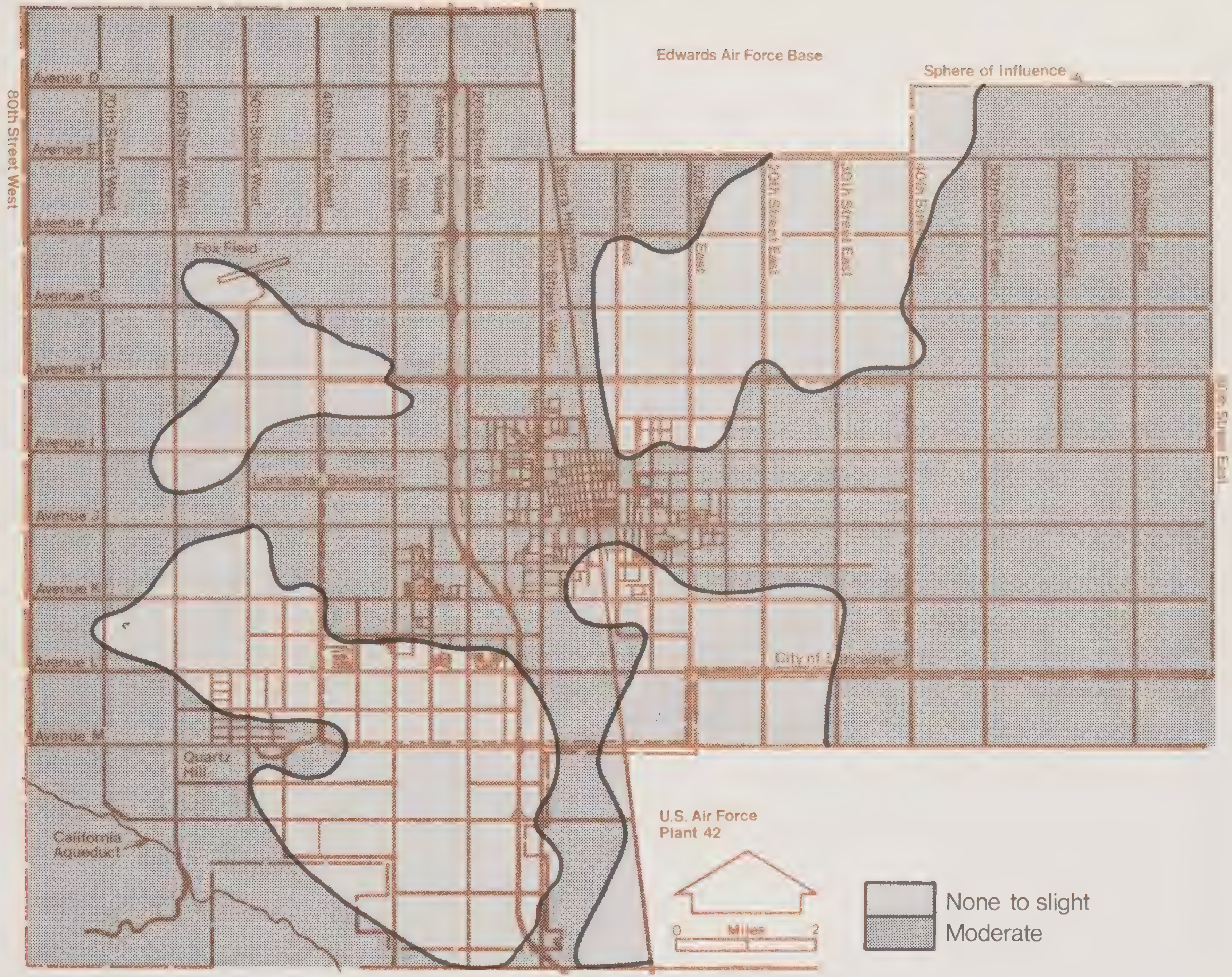
Soils in most of the City have been classified as slightly or moderately erosible. Since the City is basically flat, erosion results primarily from the intense winds which periodically blow across the desert floor, and the seasonal runoff from rainstorms in major drainage courses.

At times, the blowing dust and soil have been a significant problem. Historically, windbreaks were planted in the southwest portion of the City's planning area to impede the wind's velocities and their concomitant dust. Abandonment of agricultural operations left many areas barren and has compounded this problem.



Shrink-Swell Potential

Figure 1



Soil Erosion Hazard

Figure 2

Small areas of the City's planning area, along the foothills, exhibit high and very high erosibility. Winds in these areas aggravate the problems of blowing dust.

c. Septic Tank Filter Field Limitations

Soils are classified according to their ability to absorb and drain water. This ability is a function of soil grain size, uniformity of grain, compaction, and soil depth, among other factors, and is often referred to as "permeability". Generally, there is a direct correlation of the permeability of soils and the feasibility of on-site sewage disposal systems, such as septic tanks and seepage pits on leach lines. Coarse-grained soils such as clean gravel or sand, will percolate better than silt or clay. The three percolation ratings which have been assigned by the S.C.S., which also take into account water table depth, are: good (slight limitation), moderate (moderate limitation), and poor (severe limitation). These classifications are illustrated on Figure 3.

Most of the north and northwest areas of the City of Lancaster are characterized by soils of moderate and severe limitations on septic systems. Urban classes of development in these areas will almost certainly require connection to sewage disposal and treatment systems. As most of this area is within or immediately adjacent to developed sanitation districts, with excess capacity (refer to the Land Use Element), this should not constitute a significant problem.

Development within the City's planning area, outside of the sanitation districts, to the west and north will be impacted by the moderate and severe septic limitations of the soil. Of particular concern are those areas with severe limitations -- west of the City between Avenue I and Avenue K and north of the City between 70th Street West and Sierra Highway.

d. Subsidence

Subsidence is the gradual sinking of an area due to a decrease in subsurface pressures. Its occurrence is related to the presence of compactable soils to depths of hundreds or thousands of feet; the nature of the surface soil has no direct correlation with the subsidence potential. Subsidence is generally related to overpumping of water wells or the depletion of oil fields. It is usually detected only by very careful surveying

Septic Tank Limitations
Figure 3

over a period of many years, inasmuch as an elevation difference of a few feet may occur over many square miles. It cannot be predicted accurately unless detailed subsurface data, including soil characteristics and an estimate of fluid reserves, are available. For purposes of this study, only areas of known historic subsidence were considered. An area centered around and east of the City of Lancaster has exhibited the greatest subsidence in the Antelope Valley (Figure 4).

Four zones of subsidence are delineated, based on rates for a recent five-year period. These zones are: low, low-moderate, high and very high. Their boundaries correspond with subsidence contours of the Los Angeles County Engineer.[1]

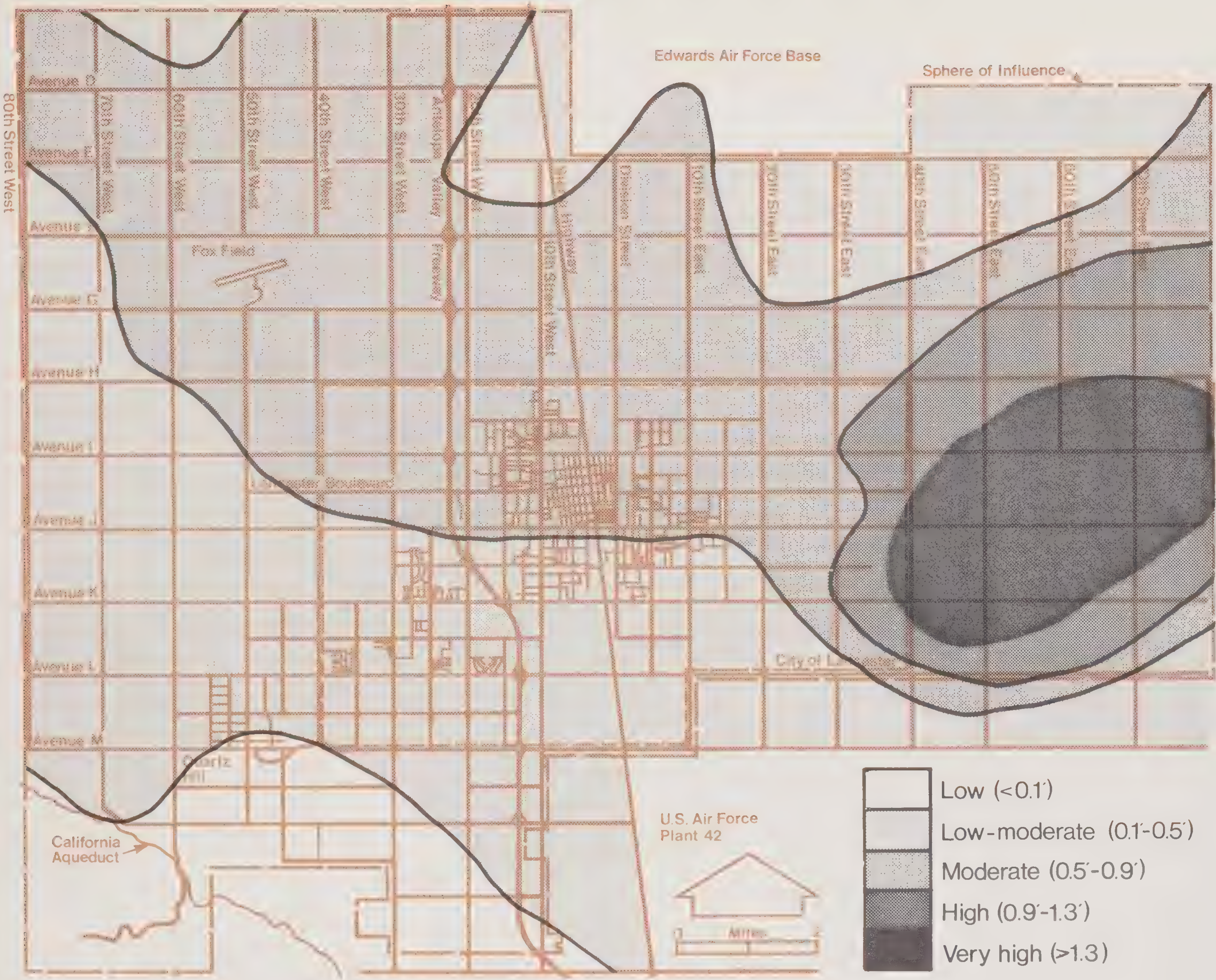
Since 1929, total maximum subsidence in the surveyed area has been approximately 3.4 feet. The latest maximum rate of movement in the area is estimated at 0.3 feet per year. In 1967, it was approximately 0.1 feet per year. In most cases, subsidence is not severe enough to cause significant damage to developments or necessitate special land use restrictions. If detected early, detrimental effects can usually be minimized or the cause neutralized. However, the maximum subsidence magnitudes that have occurred in the eastern and northern Lancaster area could significantly affect drainage and sanitary structures, and should receive specific attention in future studies.

e. Hydrocompaction

Hydrocompaction is a shallow form of subsidence, caused by the addition rather than the extraction of fluid. It has been noted in the desert and semi-arid regions of southern California, particularly in the alluvial areas of in the northwest portion (north of Lancaster Boulevard, west of the Antelope Valley Freeway) of the City. However, the hydrocompaction potential of an area cannot be adequately evaluated without subsurface soil data, which has not been aggregated at this time.

Hydrocompaction usually occurs in relatively loose, open-textured soils above the water table. Once water is introduced by a rise in the water table, the soil loses its strength and consolidates under its own weight. This form of subsidence can be particularly

[1] Los Angeles County Engineer, 1974, Land Subsidence, Antelope Valley Area of Los Angeles County.



Subsidence

Figure 4

damaging to structures because it can result in large differential settlements within short distances. It can also result in the phenomenon known as settlement. In settlement, the weight of fill placed on top of the soil causes compaction of the subsurface soils, even though there is no change in the groundwater conditions.

2.3.2 Slope Stability Hazards

Within the City of Lancaster, less than 0.1 of 1% of the City's 37 square miles could be considered as a slope area. This 20-acre site is the north face of Quartz Hill, which is considered generally stable. The remaining 99.99% of the City is judged to be stable. In this context, "stable" implies only the apparent absence of landslide hazard. It does not preclude the occurrence of other soil-related problems, such as: shrink-swell, erosion, septic tank limitation, subsidence, and hydrocompaction. These problems have been previously discussed.

Within the planning area are moderately unstable to unstable slopes. These areas are the foothills and slopes of the Anaverde Hills in its extreme southwest portion.

2.3.3 Major Fault Zone

There are no major fault zones within the City of Lancaster. The San Andreas Fault Zone, as delineated by the provisions of the Alquist-Priolo Geologic Hazard Zones Act, is south of the City and also south of the City's planning area. The effects that an earthquake along the San Andreas Fault would have on the City of Lancaster are discussed in detail in the Seismic Safety Element.

3.0 Issues

This section discusses issues related to public and private management of the previously identified hazards. These issues generally focus on two areas of concern: community features impacted by the hazards; and problems encountered in delivering hazard-associated services.

Concepts of risk and management that are related to administration of these issues are also discussed. Risk and management are combined because the public right to protection from threats to health, safety and welfare is naturally linked to government responsibility for establishing reasonable programs to that end.

An issue is a general point of concern, relating to questions that may be disputed but have yet to be decided. Issues are established as a result of scientific judgments concerning the historic, current, and anticipated problems of a situation. An issue may also be identified by public response to previous planning efforts, through surveys, newspaper articles and letters, and public Planning Advisory Committee meetings. In most cases, issues are characterized by the diversity of public and private opinions they tend to provoke.

When issues are grouped together, they constitute the concerns for which policies and programs are developed. All issues cannot be addressed in the Element, however, and the issues included are those for which planning can actively seek solutions.

<u>Risk Definition</u>

Hazards jeopardize the health, safety and welfare of the public. While natural and man-made hazards of some kind and degree are always present, it is important to determine how much risk is acceptable. The following is a framework that can be used by the community in considering risk acceptability and unacceptability.

1. <u>Acceptable Risk</u> - Any situation in which the chance of injury, damage or loss is low enough so that no specific government action is deemed necessary.

2. <u>Unacceptable Risk</u> - Any situation in which the chance of injury, damage or loss is sufficient to require specific government action.

3. <u>Avoidable Risk</u> - Any situation in which the chance of injury, damage or loss can be reduced by achieving alternative policies that mitigate or avoid the risk.

For each hazard, it is desirable to determine the degree of risk present and the potential methods for managing the situation. All levels of risk can be expected for each hazard; thus, risk management must be broad enough and flexible enough to account for diverse possibilities.

Risk Management

Three basic methods of risk management are: hazard avoidance, hazard reduction, and hazard elimination. Avoidance is necessary when the severity of the risk is high and mitigation measures are not desirable. Hazard reduction is the mitigation of a risk situation so that the risk becomes acceptable. Elimination of a hazard is the physical alteration of a risk situation, such as grading in slide-prone areas. For each of these methods, the goal is to change an unacceptable risk to an acceptable or avoidable risk.

Determination of which method to employ is based on an examination of specific site characteristics at a more refined scale. These characteristics include not only the natural phenomena discussed earlier, but also economic, social and environmental sensitivity consideration. At the regional-plan scale, however, these characteristics can be examined only in broad categories for general policy and program development.

3.1 Issue One: Fire Hazards

Fire hazards can be considered an avoidable risk. Although the propensity for urban and brush fires remains high, protection of life and property and reduction of adverse impacts can be improved by proper preventative measures and emergency service. To maintain this improvement, fire protection management for urban fires must depend on four areas of existing opportunity.

Foremost is public attitude. It is essential for the public to be aware of the dangers of fire and to cooperate in adhering to fire preventative regulations. In addition, citizens can continue to reduce risk through demand for better protection in older buildings and public buildings, legislative efforts for non-flammable clothing and furnishings, and parental guidance to young children.

In addition, risk is reduced by the low-density character of most of the area's residential development. This prevents fire from spreading and reduces the number of lives affected by any single emergency. Increasing urbanization in the future, however, will change this characteristic. As densities increase, careful planning to ameliorate potential risk must be considered.

Finally, numerous existing programs, ordinances, and codes indicate the active nature of the fire protection program, as supported by the City residents. The ongoing nature of these programs reduces risk in new as well as older construction.

Several problems related to fire hazards require more detailed discussion.

1. Population Growth - Increased population and expanded urban development will create a demand for additional fire protection services. These additional services will be required for homes, commercial establishments, industry, and public facilities. Increased surveillance will also be needed for aging structures. The development of a hazardous situation in these older buildings will depend on maintenance by occupants or owners, as well as the continued application of existing and proposed fire safety ordinances.

2. Dispersed Population Settlement - A dispersed population and settlement pattern is characteristic of rural portions of the planning area. This disperson requires greater public expense

for the equipment that is needed to provide adequate service to outlying areas. If these additional services are not provided, it can take an excessive amount of time for fire equipment to reach a distant area. Thus, additional expense must be balanced with the level of service desired.

3. Access - In this case, access refers to the ability to enter or leave an area in the event of an emergency. In other words, fire equipment must be able to reach a given site, and in the event of wildland fires, it must be possible to evacuate the resident population. In either case, problems can be caused by topographic obstructions, subdivision design, or narrow rights-of-way. Compounding the problem in the case of brush fires is the fact that resident evacuation and fire services delivery must occur concurrently. This can cause delays in the delivery of services, and may also lead to the need for more expensive special equipment.

4. Water Supply - Inadequate water supply can hamper efforts to control urban fire hazards. This is particularly true for many of the small mutual water companies that have relatively little storage capacity surrounding the City. Water District Number 4, on the other hand, has two water storage tanks that provide sufficient reserve water to meet most emergencies. In many situations, the fire department must depend on water sources other than standard underground piping, e.g., department tankers, irrigation ponds and channels, or homeowners' emergency reservoirs. In addition, periodic fluctuations in water pressure can render piped water insufficient, jeopardizing personal safety and increasing public expense. In general, this problem has been resolved by requiring underground piping to be large enough to provide sufficient pressure, flow rates, and duration.

5. Multi-Story-Buildings

   Development of the City of Lancaster is likely to be accompanied by an increased number of multi-story buildings. These buildings are especially sensitive to fire hazards due to the concentration of a large number of occupants. Multi-story structures are also dependent on internal

mechanical systems (e.g., ventilation, water availability and pressure, and elevators), and there is a high potential for disaster due to the failure of any of these systems. Therefore, procedures for emergency response by fire and rescue teams and internal disaster evacuation plans must be predetermined. In addition, access of personnel and equipment to upper stories, as well as evacuation of building occupants, is a major problem. Multi-story buildings require additional special services not needed for low-rise construction and thus cause a potential increase in the cost of fire protection service.

6. Brush Fire Hazards

The presence of vacant parcels in the City can represent a fire hazard unless adequate brush and weed abatement programs are enforced. In those situations where vacant parcels are permitted to collect windblown tumbleweeds and to grow wild natural grasses, neighboring properties are endangered. Complete removal of all brush and grasses by discing will remove the fire hazard but causes a dust problem. Since discing is the easiest method of weed abatement, it is often relied on. Perhaps more difficult and equally fire preventative would be the removal of tumbleweeds and cutting and removal of grasses.

Brush abatement, a traditonal form of fuel modification, has saved many structures and lives. However, rising prices for this service, combined with Air Pollution Control District burning regulations, have decreased the homeowner's ability to afford these services on an individual basis. Because of the proven success of brush clearance practices, it may be necessary to establish new methods of financing and management, such as special districts, neighborhood associations, or direct City involvement.

3.2 Issue Two: Geologic Hazards

3.2.1 Soil-Related Problems

Generally, the soil-related hazards, such as subsidence, expansive soil, settlement, and poor percolation can be avoided or mitigated. While these can result in economic loss to homeowners, they do not pose a threat to life and are not usually considered an unacceptable risk. Most of these hazards can and should be eliminated by appropriate application and enforcement of grading and building codes during construction.

Although relatively minor land subsidence (due to groundwater withdrawal) affects part of the City's planning area, it is not expected to reach serious enough proportions to warrant great concern, except in a broad regional sense, since it may affect drainage or sewer lines. Monitoring and surveillance of possible subsidence areas are warranted, even though it is not considered an unacceptable risk at this time.

Soil percolation characteristics, while not in themselves a hazard or risk, influence the feasibility and performance of private, on-site sewage disposal systems. The presence of soils capable of adequate percolation can have a direct bearing on development feasibility. Besides having land use implications, such as density limitations, the use of private systems must be evaluated for possible long-term environmental impacts, especially in regard to health, groundwater degradation, and soil instability.

3.2.2 Slope Stability Problems

Landslides and related slope instabilities are, for the most part, non-existent in the City of Lancaster. Where they do exist in the planning area, they can and should be mitigated in the planning or construction stages of development, either by prohibiting construction within a slide area (avoidance) or eliminating the risk by corrective grading or other stabilization measures.

4.0 Policies

This section sets forth the suggested policies of the Public Safety Element. These policies, which provide direction for achievement of the Element's goals, will be carried out through implementation programs utilizing public and private resources. Policies are an intermediate step between goals and the programs that are intended to provide guidance for decision-makers in specific areas.

To a great extent, the following policies are concomitant with those proposed by various public and private agencies. Many are now under consideration by the City Engineers, the Los Angeles County Fire Department, as well as various State agencies.

It shall be the policy of the City of Lancaster to:

4.1 General Policies Related to All Issues

1. Establish and enforce programs for the reduction of fire and geologic risk.

2. Review and update disaster preparedness and emergency response capabilities as necessary.

3. Require all new development and selected classes of existing development to meet and establish fire and geologic safety standards.

4. Encourage improved fire and geologic hazard insurance programs.

5. Encourage public education programs pertaining to fires and geologic problems.

4.2 Issue One: Fire Hazards

1. Require that vehicles carrying hazardous materials be routed along transportation corridors that reduce public exposure to risk.

2. Control urban development in areas with identified brush fire hazards (shown on Figure 5), except in areas where fire retardant planning and/or fuel removal have reduced the fire hazard, to the satisfaction of Fire Authorities.

3. Continue weed abatement and brush clearance programs to reduce fire hazards to property adjacent to vacant land.

Fire Hazard

Figure 5

4.3 Issue Two: Geologic Hazards

1. Establish site criteria for areas with geologic problems, and prohibit construction if these criteria are not met.

2. Pursue programs and practices for dealing with erosion, settlement, and other soil-related hazards.

3. Encourage continued research in the field of geologic hazard reduction.

5.0 Implementation

The implementation program for the Public Safety Element provides an action recommendation for each policy. In developing this program, attention has been concentrated on budgeting, manpower, feasibility, and priorities.

Implementation determines the course of action to be followed during the time period covered by the planning program. However, certain problems must be solved immediately, while others can be dealt with slowly over a longer period of time. Thus, programs are phased; that is, one program must be implemented prior to another, either due to their sequential nature or limitations of resources. The course of action to be followed, therefore, consists of both the program and phasing.

Phasing is determined by establishing priorities. These priorities take into account limited resources that prevent government (and society in general) from accomplishing all goals and aspirations. They focus available financial and personnel resources on the most critical problems, while maintaining high-quality service in ongoing programs. The duration of each phase is determined by the availability of these resources and the effectiveness of programs, once implemented, as well as public acceptance of programs.

Criteria for establishing priorities are based on three considerations:

1. A significant threat to life and property.
2. A major threat to dependent populations or large concentrations of people.
3. The need to take advantage of an opportunity before it is lost.

Based on these criteria, priorities have been established. The priorities are:

<u>First Priority Action Areas</u>

Fire-Hazardous Buildings
High-Occupancy Structures
Dependent Populations
Brush and Weed Fire Hazards
Residential Fires

Industrial Fire Hazards
Emergency Response
Coordination
Public Information

These priorities have been used to determine which policies and programs should receive immediate attention and which can be acted upon at an indefinite future time. First priority actions are those that should be initiated at the earliest possible opportunity during the next five years (although their duration may extend beyond that period).

The following programs are applicable to public safety policies in the City of Lancaster. All programs are considered first priority action recommendations unless otherwise noted.

5.1 Programs

1. The City Planning Department should refine criteria for identifying unacceptable risk and establish a procedure for incorporating these criteria into the decision-making process of City government.

2. The City should regularly review their emergency response capabilities and closely coordinate its Plans with the County Disaster Services Section as well as State and Federal agencies dealing with disaster preparedness.

3. Community programs should be established that train volunteers to assist police, fire, and civil defense personnel during and after a major earthquake, fire, or flood.

4. Upon adoption of the Safety Element, consideration should be given to establishing a review committee to oversee the implementation of the Element and to advise the City Council of implementation progress.

5. The Safety Element should be reviewed by the Planning Department annually and should be comprehensively revised every five years or whenever substantially new scientific evidence becomes available.

6. An inventory should be taken and regularly updated of potentially fire hazardous buildings.

7. Identification of the building should include occupancy type, value, and age as well as the social and economic characteristics of the occupants.

8. Priorities should be established for the renovation, demolition or occupancy reduction of identified potentially hazardous buildings.

9. There should be regular inspection of institutional, industrial, and indoor public assembly areas.

10. The City Building Department should require geologic investigations of all sites determined to be in geologically hazardous zones prior to granting building permits.

11. Consider advocating the expansion of State and Federal relocation assistance funds and programs to aid persons and businesses displaced from hazardous buildings.

12. Encourage installation of smoke detectors in residences within the City.

13. The County Department of Urban Affairs should be encouraged to study a system of required fire insurance to be developed in conjunction with a subsidy and hazard abatement-incentive program (second priority) that would be of benefit to Lancaster and its planning area.

14. The school districts in the City should develop a fire education program in the public schools.

15. Education programs should be initiated in lower grades using displays and demonstrations that would expose younger children to the nature and strength of fire. Such programs should tend to replace their natural curiosity with a sense of respect.

16. Exhibits and presentations should be encouraged in secondary schools which demonstrate the more involved aspects of fire dynamics (i.e., major contributing factors to fire hazard and the relationship of fire to the natural ecology. Encourage parental cooperation and assistance in overall fire education programs.

17. An ordinance defining hazardous materials should be adopted.

18. The City should conduct negotiations with trucking and rail companies to route hazardous materials along acceptable corridors.

19. The City should enforce emergency response methods in the event of disaster situations.

20. The County Road Department should be encouraged to minimize the possibility of roadside fires through brush, weed, and trash removal.

21. Maintain present fire hazard programs.

22. The City should establish and enforce a weed abatement and brush removal program that reduces the hazard of fire, yet permits sufficient vegetation to prevent dry dust conditions.

23. Establish more intensive geologic review procedures for zoning, subdivision, and major building permit requests.

24. Conduct ongoing study of codes and provisions that will result in desirable code changes as new technology is devised.

25. Identify and evaluate unacceptable landslide risks and slope stability problems, and potential abatement opportunities.

26. Perform geologic investigation of all sites determined to be in geologically hazardous zones prior to granting of building permits.

27. Establish geologic mapping program at a scale of 1:24,000.

28. Establish more intensive erosion control for zoning, subdivision and major building permit requests.

29. Continue and intensify programs to identify and monitor subsidence.

30. Research, evaluate, map, and periodically update a general geotechnical data base.

8. Air Quality Element

1.0 Introduction

1.1 Scope and Purpose

The intent of the Air Quality Element is to examine potential problems caused by increased urbanization of the City of Lancaster and its sphere of influence. Current and future increases in vehicle and industrial emissions due to development will inevitably degrade existing air quality. The basic objectives of this Element are to understand the relationship between urban development and air quality, determine the extent of emission problems, and suggest potential means of mitigating air quality problems.

1.2 Relationship to Other General Plan Elements

The Air Quality Element is most closely related to the Circulation, Land Use, and Environmental Resources Management Elements. A major emission source evaluated in this Element is vehicular traffic. The amount of emissions generated by this source depends primarily on the number and type of vehicles in operation as planned for in the Circulation Element. In addition, potential localized air quality problems are determined by traffic route characteristics as planned in the Circulation Element.

Inseparable from the circulation considerations in the General Plan are the locations and types of land uses throughout the City. The location of various land uses and the distances between them are major determining factors in the present and future production of air pollutants.

The Environmental Resources Management Element serves to integrate the concerns and problems outlined in the Air Quality Element with other environmental problems and relate these problems to each other and the Land Use Element. This integration allows for a setting of priorities and a resolving of potential conflicts between Elements of the General Plan.

2.0 Air Quality Environment

The City of Lancaster's air quality, like other natural resources, is limited. Within any time period, the local air basin has a restricted ability to dilute contaminants and remain clean enough for the population to breathe without experiencing adverse effects. Although local air quality appears to be very good when compared to other communities in Southern California, the City does experience some substantial air pollution generated from local sources.

2.1 Factors Affecting Air Quality

Air quality varies with the amount of pollutants emitted and the subsequent dispersion of the pollutants into the atmosphere. When the rate of dispersion does not equal the rate at which pollutants are added to the atmosphere, air quality problems arise. Inversions, light winds, and mountain ranges are factors that limit the local air basin's capacity to disperse pollutants.

The City of Lancaster is located within the Southeast Desert Air Basin (SEDAB) of the South Coast Air Quality Management District (SCAQMD). SEDAB is separated from the more populous South Coast Air Basin by the San Gabriel, San Bernardino, and San Jacinto Mountains. Three basic types of air movement in the SEDAB are significantly related to air quality: (1) nighttime drainage flows, which often determine flow and mixing for local sources in the early morning hours; (2) "smog fronts" that are identified with the importation of polluted air from urbanized regions nearer the coast; and (3) Santa Ana circulations that tend to move air toward coastal regions and that, during weak portions of the growth or decay stages, can "stall" the smog front flows and cause stagnation conditions that might amplify pollution effects from local flows.

2.2 Jurisdiction and Standards

Air quality control involves several levels of government. The Clean Air Act (1970) is the major Federal legislation addressing air quality. The Act deals with both vehicular and stationary emission sources. Pursuant to this Act, the Environmental Protection Agency has the vested authority to set air quality standards and to oversee State implementation of those standards. California's Air Resources Board is responsible for establishing implementation plans for the attainment and maintenance of Federal and State ambient air quality standards. The SCAQMD is responsible for permit processing, monitoring, and enforcement in the Antelope Valley; however, final rule adoption is the responsibility of the Los Angeles County Board of Supervisors.

A recent amendment to the Clean Air Act includes provisions for identifying and dealing with areas which do not meet and/or are not expected to meet the national air quality standards. Lancaster lies within an area of non-compliance and therefore must develop an Air Quality Attainment Plan (AQAP) to demonstrate how the area intends to attain national standards in the future. The plan delineates the degree and manner in which the emission rates must be "rolled back", or reduced, in order to meet the National

Ambient Air Quality Standards by 1982, Non-attainment plans for the Los Angeles County portion of SEDAB are in the process of preparation by the Air Resources Board (SCAQMD and SCAG, January, 1979).

National and State standards have been established to indicate concentration levels at which pollutants will have a harmful effect upon humans. These standards are displayed in Table 8.1. An area is not in compliance with the standards if it experiences pollutant concentrations in excess of the amount or frequency designated in Table 8.1. Although exceedance of such standards has long-term significance for the entire population, it can have particularly adverse health effects on those segments of the population designated as "sensitive receptors". Sensitive receptors are those who are most vulnerable to air pollution, including persons with respiratory and heart ailments, the very young (under five years), and the elderly (over 65 years). Factors such as age, location of residence, income, mobility, and sex are also closely linked to pollutant sensitivity.

2.3 Existing Conditions

While there are natural sources of pollutant emissions in the environment, the human population contributes quite significantly to localized concentrations of certain pollutants. Transportation, the generation of energy, manufacturing of goods, household heating, and waste disposal all contribute to the emission of contaminants into the air.

Air quality monitoring in the City of Lancaster (Table 8.2) demonstrates that oxidants, non-methane hydrocarbons, and total suspended particulates have been a problem in the Lancaster area. The high oxidant season ("smog season") extends from May to September, with Federal air quality standards being exceeded approximately 25% of the time. A significant proportion of the oxidant problem in the City of Lancaster is due to the transportation of contaminants from the South Coast Air Basin into the SEDAB.

TABLE 8.1

AMBIENT AIR QUALITY STANDARDS

	Pollutant				
Standard	*Oxidants*	*Carbon Monoxide (CO)*	*Nitrogen Dioxide (NO2)*	*Non-Methane Hydrocarbons*	*Particulates*
FEDERAL					
Primary	1 hr. - .12 ppm	8 hr. - 9.0 ppm 1 hr. - 35 ppm	Ann. Ave.- .05 ppm	3 hr. - 160 $\mu g/m^3$ (0.24 ppm)	Ann. Ave. - 75 $\mu g/m^3$ 24 hr. - 260 $\mu g/m^3$
Secondary	1 hr. - .12 ppm	8 hr. - 9.0 ppm 1 hr. - 35 ppm	Ann. Ave.- .05 ppm	3 hr. - 160 $\mu g/m^3$ (0.24 ppm)	Ann. Ave. - 60 $\mu g/m^3$ 24 hr. - 150 $\mu g/m^3$
STATE	1 hr. - .10 ppm (200 $\mu g/m^3$)	12 hr. - 10 ppm 1 hr. - 40 ppm	1 hr. - .25 ppm	None	Ann. Ave. - 60 $\mu g/m^3$ 24 hr. - 100 $\mu g/m^3$

TABLE 8.2

NUMBER OF DAYS AIR QUALITY DID NOT MEET STANDARDS AT THE LANCASTER MONITORING STATION

Parameter	*1971*	*1972*	*1973*	*1974*	*1977*
Oxidant (1-hour)	83	92	134	75	102
CO (8-hour)	0	1	0	0	ND[1]
NO_2 (1-hour)	0	0	0	0	ND
Non-methane HC	128	169	149	170	ND
Particulates (24-hour)[2]	-	-	56%	44%	2%

[1]No data.

[2]Particulates are percent of observation.

Source: Department of Transportation, 7AA, 1979, p. 113; and South Coast Air Quality Management District, October, 1978.

2.4 Future Conditions

Future development in the City of Lancaster, as described by the various scenarios in the Land Use Element, may result in a substantial increase in local emissions and possibly cause further degradation of air quality in the Antelope Valley by offsetting air quality improvements expected through implementation of controls suggested by the Air Quality Management Plan for the South Coast Air Basin (SCAQMD and SCAG, January, 1979). While it is nearly impossible to accurately estimate effects on air quality resulting from cumulative short-term emissions, such as emissions from construction work, and long-term emissions from future industrial plants, comparative emissions based on the expected population changes due to the various land use scenarios can be determined. Table 8.3 indicates that substantial emission increases in NO_x, SO_x, particulates, and hydrocarbons and organic gases can be expected, while potential increases in CO emissions will be offset by future stringent automobile exhaust standards currently legislated. Actual future air quality in Lancaster will be determined by the effect of air quality plans for both the South Coast and Southeast Desert Air Basins and the interface of these plans with future regional transportation and growth plans.

TABLE 8.3

TOTAL MOBILE AND STATIONARY EMISSIONS (tons/day)[1]

		Future Land Use Scenarios (Land Use Element)				
Pollutant	*Current 1979*	*E-O w/0 PMD*[2]	*E-O w/PMD*	*D-150 w/o PMD*	*D-150 w/PMD*	*Capacity (from Land Use Map)*
CO	19.974	6.463	9.266	11.539	14.343	19.239
NO_x	6.354	7.134	9.219	11.509	13.598	18.287
SO_x	7.167	10.691	13.412	17.011	19.669	27.091
TSP (Particulates)	0.989	1.219	1.432	1.780	2.152	2.868
Hydrocarbons Organic Gases	1.725	1.156	1.602	2.002	2.447	3.303

[1]Mobile emissions based on an estimate of 3.6 vehicle trips/person/day with an average trip length of 5.5 miles and emission factors from South Coast Air Quality Management District, Air Quality Handbook for Environmental Impact Reports. Stationary emissions based on estimated energy use (Lancaster Land Use EIR).

[2]Palmdale International Airport.

3.0 Resource Issues

3.1 Relationship Between Air Quality and Vehicle Use

Motor vehicles are the source of approximately 70% to 95% of the total amount of each of the major pollutants emitted locally. Despite the fact that substantial reductions in auto emission have been brought about by federally mandated improvements in emission controls, significant violations of air quality standards still occur and are predicted to occur in the future. In the complex relationship of vehicle use and air pollution, the City of Lancaster has effective jurisdiction only over land use practices. Land use controls can affect the nature and distribution of commercial and residential uses which generate auto trips and can affect the supply and utilization of parking facilities.

Land use controls should internalize air quality considerations that are aimed at minimizing the need for auto use, minimizing auto trip length, and maximizing the use of alternative forms of transportation. Because the auto is the focus of the existing transportation system, the present land use pattern is oriented toward scattered residential and commercial development. This type of spatial distribution serves to make public transit ineffective and bicycle and pedestrian travel inadequate, leaving the auto as the only means of providing convenient transport for necessary work, shopping, and personal trips.

The City can utilize its control over the nature, location, and intensity of land uses in a manner which applies strong disincentives to developments which would encourage single-occupant and/or single-purpose auto trips. Similarly, incentives can be employed to promote developments which concentrate and/or mix uses in a manner which would result in decreased miles travelled and a reduction in auto dependency.

3.2 Costs of Air Pollution

The costs of air pollution include increased and additional cleaning costs, increased costs for medical treatment, loss of income due to sickness and decreased function, and damage to ornamental and food crops. Another cost directly associated with air pollution could be federal sanctions that may be applied if the Antelope Valley region does not demonstrate, through its air attainment plan (AQAP), how local air quality is to achieve standards. Sanctions could include the withholding of federal highway construction funds and federal grants for sewage treatment and other public facilities.

3.3 Improving Air Quality

Plans for improved air quality must recognize that pollutants do not respect jurisdictional boundaries, and, as such, air quality within the City will be determined by the success of pollution controls imposed throughout the entire region. The air quality plans currently being developed by the Air Resources Board will demonstrate how this area proposes to attain air quality standards in the future.

Because the local Antelope Valley air basin has a limited capacity to dilute pollutants, strategies aimed at limiting emissions must be geared to ultimate thresholds established for the problem pollutants. The Air Quality Attainment Plan should address the air resource "holding capacity" or "budget". This complicated technical problem involves defining an area's threshold for pollutants in order to determine allocation of the remaining capacity. In this regard, local agency cooperation with these efforts is needed to ensure optimum land use/air quality planning. In the interim, until the region's "holding capacity" has been defined, major development proposals should be thoroughly evaluated for adverse air quality effects.

The land use policies included in the next section are intended to ensure community cooperation in regional efforts to improve air quality. The strategies included will not be easily accomplished, as they will require change, cause some inconvenience, and will have associated costs.

4.0 Policies

IT SHALL BE THE POLICY OF THE CITY OF LANCASTER TO:

1. Consolidate patterns of urban and suburban development to minimize vehicle miles traveled and concomitant air pollutants.

2. Locate public services, commercial uses, and places of employment in close proximity to residents to minimize vehicle miles traveled and concomitant air pollutants.

3. Disperse urban service centers (libraries, post offices, social services, etc.) to minimize vehicle miles traveled and concomitant air pollutants.

4. Locate potential significant sources of air pollutants (e.g., medium industry) in areas which will not adversely affect adjacent or regional land uses.

5. Encourage the development and expansion of public transportation systems to reduce air pollutants.

6. Promote air quality that is compatible with health, well-being and enjoyment of life by the prevention of property and vegetative change and deterioration of aesthetic quality which results from air pollutants.

7. Enforce federal, state and local air quality standards.

8. Encourage the South Coast Air Quality Management District to maintain the local station to monitor air quality.

Appendices

Appendix A

Transporation Model Development

1.0 Introduction

This Appendix provides a brief description of the modeling techniques developed for use in the Circulation Element Update of the Lancaster City General Plan. Use of these modeling techniques provided traffic assignments for both a 1976 and 1990 roadway network utilizing the socioeconomic and land use data base developed in the Land Use Element. Prior to model application, forecasted model results for 1976 were compared with average daily traffic counts collected in 1976 as the basis for assessing the predictive capability of the model process.

The remainder of this Appendix provides a discussion of the travel forecasting process. More specifically, it describes the theory and corresponding assumptions used in preparing the models, along with a detailed description of the construction of both the 1976 and 1990 trip matrices, which form the heart of the travel demand model process.

2.0 Travel Forecasting Process

There are three basic premises upon which the Lancaster modeling techniques were constructed. First, and probably most importantly, the models are based upon regional travel forecasts prepared by the Los Angeles Regional Transportation Study (a technical division of Caltrans). Secondly, these travel forecasts were modified to reflect specific socioeconomic and land use data developed as a product of the Lancaster General Plan update process. And, finally, these travel forecasts were disaggregated to provide a more detailed internal zonal structure, thereby allowing the analyses to be conducted at intra-City detail.

The regional travel forecasts were first condensed to a level in which only those trip movements which began, ended, or passed through the Lancaster study boundary were considered. Following this step, the resulting trip tables were then further subdivided into those trips which were externally oriented to the study area and those which were internal to the study area. The purpose for this subdivision stems from the precise technique used in both modifying and expanding these initial trip tables. The initial LARTS trip matrix existed at a 1,325 zone level. The initial compression resulted in a trip table of only 31 zones in which the first five zones represented the City area and the remaining 26 zones reflected the immediate adjoining area having an important effect on City travel movements.

The modification of external travel movements assumed that the same relative distribution of travel (i.e., the percentage of external travel to any particular destination or vice versa) would remain constant over time. Conversely, the internal matrix was modified using the Fratar distribution technique which

specifically responds to the socioeconomic and land use changes estimated for the zones within the City study area. Although the distribution of external trips to cordon and immediately adjoining study area zones remains relatively constant, their unique distribution to and from the internal zones, like that of internal travel, is sensitive to the level of activity estimated from the socioeconomic and land use data input.

In this manner, both the magnitude and distribution of existing and future year Lancaster travel was explicitly sensitive to the character and distribution of forecasted socioeconomic and land use patterns.

3.0 Network Calibration Procedure

The base year, 1976, trip tables constructed from the above process were assigned to a 1976 roadway network using the Urban Transportation Planning System (UTPS) assignment software to determine the ability of the modeling system to simulate actual travel patterns. A detailed link by link comparison was made between 1976 model generated forecasts and 1976 average daily traffic volumes available for a number of locations within the City limits.

Results of the network calibration proved the modeling process to be acceptable. In nearly all cases, the projected volumes matched relatively closely with the actual observed count for 1976.

4.0 Preparation of the 1976 and Future Trip Matrices

As described above, the preparation of trip matrices for the Lancaster study area was composed of four steps. First, a 31 zone trip matrix was extracted from the regional level to include only those trips which had one or both ends within the Lancaster study area. Secondly, the internal trip matrix (both ends within the study area) was modified to reflect the recently updated socioeconomic and land use forecasts. The third step modified the external trip matrix similarly reflecting the revised land use forecast, but assuming that the relative distribution to external locations would remain constant. And, finally, both the external and internal matrices were combined and expanded into a detailed 52 zone matrix, providing 26 zones in the City study area, and 26 external zones including cordons.

The equivalence between regional transportation zones (1,325 zone level) and the Lancaster 31 zone system is shown in Table 2.2.1. The first five zones are entirely within the City limits. The remaining 26 zones, just outside the City limit area, as well as cordon stations, provide access and egress to the

remainder of the region. In both the 1976 and Future Year cases, total daily vehicle trips were used.

The modification of internal trip movements was a two step process. The first step calculated revised production and attraction growth factors based upon trip generation model relationships available from Caltrans[1,2].

The production factor used as input variables, the number of single-family dwelling units, the number of multi-family dwelling units, and the average income of the zone to project the number of vehicles per dwelling unit, their proportion (or distribution) among individual auto ownership categories (0,1,2+) and their propensity to make vehicle trips. Attraction factors were calculated by taking the ratio of assumed and estimated total employment.

The second major step in modifying the internal trip matrix used these revised production and attraction factors to create a revised trip matrix. This was done using the Fratar distribution technique. This technique, using as input the existing distribution of travel, involves constructing a revised matrix based upon the input production and attraction factors, constraining the total magnitude of demand to that produced by the trip production factors.

As a result of this process, therefore, the internal trip matrix produced was a direct reflection of the actual socioeconomic and land use data forecasts prepared for the City area.

Using the same production and attraction growth factors calculated for the internal trip movements, external trips (with either an origin or destination in the City area) were factored assuming the same relative distribution to each of its respective external origins or destinations.

Both the external and internal trip matrices were finally expanded to a 52 zone level matrix disaggregating the five City zones into a more detailed 26 zone level by simply using the respective proportion of the total production or attraction trip-ends attributable to each individual zone.

Having constructed the total trip matrix for the 52 zone study area, the trips were then loaded onto corresponding roadway networks either for 1976 or Future Year using the UTPS assignment technique which determines the minimum time path between each origin and destination zone and accumulates link totals which can then be used for detailed volume-capacity analyses.

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[1] Trip Generation Analysis Report, Los Angeles Regional Transportation Study, Urban Planning Department, September 1, 1971.

[2] Person Trip Generation Rate Adjustment by County, California Department of Transportation, March, 1977.

Appendix B

Inventory of Existing Recreational Facilities

LANCASTER

INVENTORY OF EXISTING RECREATIONAL FACILITIES:

Mariposa Park

Park Office

Multipurpose Room

Softball Field

32 Picnic Tables

Braziers

Covered Picnic Area

Elementary Play Area

No Parking

Jane Reynolds Park

Community Building w/Auditorium and Stage, Park Office, Meeting Room, Kitchen

Swimming Pool

Lighted Softball Diamond

(Flag) Football Field

Basketball Court

Volleyball Court

Lighted Tennis Court

Lighted Picnic Shelter

Horseshoe Courts

Picnic Tables

Bar-B-Ques (Gas)

Fire Circle

Elementary Play Area, Fenced

Park Benches

Security Lighting

No Off-Street Parking

Inventory of Existing Recreational Facilities (Continued)

El Dorado Park

Park Office
Multipurpose Room
Lighted Softball Field
(Flag) Football Field
Lighted Tennis Court
Picnic Tables
Elementary Play Area
Parking Spaces

Rawley-Duntley Park

1-Acre Elementary Play Area
6 Picnic Tables
6 Bar-B-Ques
No Off-Street Parking

EXISTING RECREATIONAL FACILITIES ON SCHOOL PROPERTY

Antelope Valley Community College 110 acres, 70 developed

Facilities:

Football stadium with all-weather track
Baseball field
Night lighted tennis courts (8)
Gymnasium
Indoor swimming pool
Practice field
Cement wall practice areas for tennis and handball
Dance/exercise room
Weight room
Small theater
Small music room
Cafetorium with low stage (350 capacity)

Antelope Valley High School 60 acres, 40 developed

Facilities:

2 gymnasiums - full apparatus, bleachers
Weight room
2 full-size locker rooms
Showers
Handball - one wall
Track/football field
Outdoor basketball courts (10)
Tennis courts (8)
Baseball field (2)
Backstops (softball - 2)
Parking (400 spaces)
Soccer/football practice field (2)

Existing Recreational Facilities on School Property (Continued)

Lancaster School District

Desert View Elementary School (grades K - 6) 4.12 acres recreational space

Facilities:

8 Tetherball poles
2 Basketball courts
2 Handball courts
2 Sets of swings (4 swings each)
1 Set of monkey bars
3 Chinning bars
1 Parallel bar
3 Baseball backstops
1 Volleyball court

El Dorado Elementary School (grades K - 6) 6.66 acres recreational space

Facilities:

1 Cafeteria/gymnasium with portable stage
4 Baseball backstops
3 Basketball courts
2 Swings
Balance bars
3 Jungle gyms
Chain Climber
8 Chinup bars
2 Monkey bars
2 Slides
4 Tetherball poles
1 Handball court (1 - wall)
1 Little League field

Existing Recreational Facilities on School Property (Continued)

Joshua Elementary School (grades K - 6) 12.97 acres recreational space

Facilities:

1 Cafeteria/gymnasium with portable stage
6 Baseball backstops
4 Basketball courts
5 Swings
3 Balance bars
2 Chinup bars
2 Monkey Bars
4 Slides
3 Tetherball poles
4 Handball courts (1 - wall)
5 Jungle gyms
1 Pony League field

Linda Verde Elementary School (grades K - 6) 8.16 acres recreational space

Facilities:

1 Volleyball Court
8 Tetherball poles
2 Basketball courts
3 Handball courts
2 Swing sets (1-6 swing, 1-4 swing)
1 Set chinning bars (3 bars)
2 Sets monkey bars
1 Set climbing bars
1 Slide
2 Baseball backstops

Existing Recreational Facilities on School Property (Continued)

Mariposa Elementary School (grades K - 6) 1.25 acres recreational space

Facilities:

1 Cafeteria/gymnasium with portable stage

2 Baseball backstops

3 Basketball courts

Monte Vista Elementary School (grades K - 6) 13.02 acres recreational space

Facilities:

2 Volleyball Courts

8 Tetherball poles

2 Handball courts

2 Baseball courts

2 Sets swings (4 swings each)

1 Set chinning bars (3 bars)

1 Set monkey bars

Park View Intermediate School (grades 7 - 8) 7.5 acres recreational space

Facilities:

1 Cafeteria/auditorium with permanent stage

4 Baseball backstops

8 Basketball courts

1 Swing

5 Balance bars

2 Jungle gyms

1 Slide

5 Chinup bars

1 Monkey bars

1 Rope climbing apparatus

4 Volleyball courts

4 Handball courts (1 - wall)

1 Little League field, lighted

Existing Recreational Facilities on School Property (Continued)

Piute Intermediate School (grades 7 - 8) 9.38 acres recreational space

Facilities:

6 Basketball courts

2 Handball courts

2 Volleyball courts

1 Rope climbing apparatus (3 ropes)

1 Set monkey bars

2 Sets chinning bars (3 bars each)

4 Soccer fields

4 Baseball backstops

Sierra Elementary School (grades K - 6) 5.42 acres recreational space

Facilities:

1 Cafeteria/gymnasium with portable stage

2 Baseball backstops

3 Basketball courts

2 Swings

1 Seesaw

5 Chinup bars

3 Slides

1 Monkey bar

2 Jungle gyms

3 Tetherball courts

2 Handball courts (1 - wall)

Existing Recreational Facilities on School Property (Continued)

Sunnydale Elementary School (grades K - 6) 7.39 acres recreational space

Facilities:

1 Cafeteria/gymnasium with portable stage

3 Baseball backstops

2 Basketball courts

2 Chinup bars

4 Jungle gyms

1 Chain Climber

1 Slide

11 Tetherball poles

3 Swings

2 Handball courts (1 - wall)

Westside School District

Valley View Elementary School (grades K - 6) 2 acres recreational space

Facilities:

2 Baseball backstops

2 Basketball courts

2 Swings

2 Balance bars

1 Monkey bars

1 Slide

2 Tetherball poles

1 Pony League field, lighted

COMMERCIAL RECREATIONAL FACILITIES

GOLF COURSES	PITCH & PUTT	9 HOLE	18 HOLE
Within City Limits	0	0	0
0-3 Miles of City Limits	1	1	0
3-10 Miles of City Limits	0	1	1 Private

MINATURE GOLF (Summer Only)	9 HOLE	18 HOLE
Within City Limits	0	1
0-3 Miles of City Limits	0	0
3-10 Miles of City Limits	0	0

BOWLING ALLEYS

Within City Limits	1 (10 Lanes) 1 (32 Lanes)
0-3 Miles of City Limits	0
3-10 Miles of City Limits	1 (32 Lanes)

WALK-IN THEATER

Within City Limits	1
0-3 Miles of City Limits	0
3-10 Miles of City Limits	1

DRIVE-IN THEATER

Within City Limits	1
0-3 Miles of City Limits	0
3-10 Miles of City Limits	1

LAKES

Within City Limits	0
0-3 Miles of City Limits	1 (32 acres of water, lake for fishing only)
3-10 Miles of City Limits	0

Commercial Recreational Facilities (Continued)

SKATEBOARD PARKS

Within City Limits	2
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

HANDBALL/RACQUETBALL

Within City Limits	2 facilities--15 courts
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

POOL/BILLIARDS FACILITY - 4 or More Tables

Within City Limits	3
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

ARCADE (Electric Games)

Within City Limits	1
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

ICE SKATING RINK

Within City Limits	1
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

ROLLER SKATING RINK

Within City Limits	1
0-3 Miles of City Limits	0
3-10 Miles of City Limits	0

ANTELOPE VALLEY FAMILY YMCA

PRESENT FACILITIES:

10 acre site (5 acres developed, 5 acres undeveloped)
Gymnasium - full apparatus, no bleachers
Weight room with Spartacus Universal gym
Full-size lockerroom with 130 lockers
Showers
Handball/Racquetball (2 4-walled indoor courts)
Dance Studio with mirrors and bars
Multipurpose room/chapel
Players lobby/polling place

FUTURE PLANS:

Development of ball diamonds with a running track on the perimeter and soccer field space on the infield area.

Also plan swimming pool and picnic areas with tables and bar-b-ques.

Appendix C

PUBLIC OPINION SURVEY OF PARKS AND RECREATION

RESULTS OF PUBLIC OPINION SURVEY
ON
PARKS AND RECREATION
FOR
LANCASTER, CALIFORNIA
AUGUST-SEPTEMBER, 1979

	YES	NO	TOTAL	PER CENT OF TOTAL
1. Do any members of your household use any of the City park Facilities in Lancaster?	*238 or 82%	51 or 18%	289 total responses to survey	100%

2. If so, which of the following City parks do members of your household use?
(Due to multiple responses, total exceeds 100%)

Mariposa Park	45 or 16%
* Jane Reynolds Park	190 or 66%
El Dorado Park	124 or 43%
Rawley-Duntley Park	14 or 5%

3. The closest of these to your home is?

Mariposa Park	29 or 10%
* Jane Reynolds Park	139 or 48%
El Dorado Park	87 or 30%
Rawley-Duntley Park	22 or 8%

4. The age group in your hosehold most frequently using this park is?
(Due to multiple responses, total exceeds 100%)

pre-school	33 or 11%
elementary-age children	92 or 32%
teenagers	76 or 26%
* adults	106 or 37%
senior citizens	18 or 6%

* received greatest number of responses to question

	YES	NO	TOTAL	PER CENT OF TOTAL
5. How many times per month do members of your household use a City park?				
* 0 - 4 times				151 or 52%
5 - 8 times				67 or 23%
9 + times				42 or 15%
6. Do you feel the amount of park acreage and park facilities currently existing in Lancaster is				
more than enough				9 or 3%
about right				80 or 28%
* not enough				159 or 55%
7. Are you in favor of developing more new parks in Lancaster?	*221 or 90%	24 or 10%	245 total responses to this question	100%
8. Do you feel there is a need for more commercial recreation in Lancaster?	*186 or 81%	43 or 19%	229 total responses to this question	100%
9. If so, which of the following commercial recreational activities would you patronize? (Due to multiple response, total exceeds 100%)				
racquetball court				67 or 23%
skating rink				88 or 30%
* community theater facility				113 or 39%
exercise studio/gymnasium				104 or 36%
horseback riding				86 or 30%
miniature golf				88 or 30%
disco dancing				56 or 19%
bowling alley				73 or 25%

* received greatest number of responses to question

	YES	NO	TOTAL	PER CENT OF TOTAL
9. Continued from previous page				
golf course				68 or 24%
other most frequently mentioned: swimming pools walk-in theater				54 or 19%
10. Should the use of school grounds as public park facilities be encouraged?	*177 or 69%	79 or 27%	256 total responses to this question	100%
11. Should residential developers be required to provide open space and parks in new housing areas?	*205 or 83%	42 or 17%	247 total responses to this question	100%
12. Which one of these recreational facilities is most needed in the City parks nearest you? (Due to multiple responses, total exceeds 100%)				
multi-purpose recreation center				90 or 31%
multi purpose community center				52 or 18%
community theater				39 or 13%
senior citizen center				34 or 12%
cultural arts center				31 or 11%
* teen center				103 or 36%
childrens play area				39 or 13%
13. Which one of these community sports facilities is most needed in Lancaster? (Due to multiple responses, total exceeds 100%)				
public gymnasium				96 or 33%
* swimming pool				102 or 35%
tennis courts				69 or 24%
handball/racquetball court				38 or 13%
lighted baseball diamond				49 or 17%

* received greatest number of responses to question

	YES	NO	TOTAL	PER CENT OF TOTAL
13. Continued from previous page				
jogging track				60 or 21%
outdoor basketball/ volleyball courts				58 or 20%
14. How do most members of your household get to the City parks? (Due to multiple responses, total exceeds 100%)				
* car				168 or 58%
bus				4 or 1%
bicycle				70 or 24%
walk or jog				79 or 27%
skateboard				6 or 2%
15. Do you feel that the City should build:				
many new neighborhood parks (5-10 acres)				97 or 34%
* few large community parks (20-50 acres)				107 or 37%
one or two regional parks (50-1000 acres)				56 or 19%

* received greatest number of responses to question

Appendix D

Recommended Recreational Facilities by Park Type

RECOMMENDED FACILITIES BY PARK TYPE

While the arrangement of the following facilities at each particular parksite should be left to a professional park designer, the "basic" facilities are those deemed necessary to the functioning of the site as a park; the "optional" facilities are those that make a park more useable and attractive, but are also more expensive to install and maintain.

1. Neighborhood Parks

    Basics

    - Landscaping
    - Restrooms (if park is 10 or more acres in size)
    - Multipurpose Field (unlighted, no programmed activities)
    - Tot Lot and Elementary Play Area (if park is not adjacent to an elementary school)
    - Walkways and Security Lighting
    - Picnic Areas with Tables

    Optional

    - Small office and activity building
    - Baseball Diamond
    - Multipurpose Court (Basketball/volleyball)
    - Wading Pool

2. Community Parks

    Basics

    - Landscaping
    - Ballfield (soccer/football, baseball)
    - Restrooms
    - Parking Lot
    - Picnic Areas with Shelters and Tables
    - Walkways and Security Lighting
    - Tot Lots and Elementary Play Areas
    - Multipurpose Courts (basketball/volleyball)

    Optional

    - Tennis Courts
    - Swimming Pool
    - Community Center
    - Gymnasium
    - Athletic Lighting - All Sports
    - Shuffleboard, Horseshoes, Archery
    - Wading Pool
    - Par Course
    - Concession Stand
    - Pit Bar-B-Que

Recommended Facilities By Park Type (Continued)

3. Regional Facilities

Parks-Basics

Parking
Overnight Camping
Skeet
Fishing
Archery
Boating
Equestrian Trails
Pistol/Rifle Range
Restrooms
Amphitheater
Picnic Facilities

Golf Course

Motorcycle Park

Appendix E

Noise Element Glossary

APPENDIX E GLOSSARY

Accoustics - The science of sound.

Amplitude - The maximum departure of the value of an alternating wave from the average value (Webster). In sound waves, the amplitude is the intensity of the sound.

A-Scale - Electronic network in a sound level meter which has frequency-response characteristics similar to the human ear.

Audible Range (of Frequency) (Audio-Frequency Range) - The frequency range 16 Hz to 20,000 Hz (20 kHz). Note: This is conventionally taken to be the normal frequency range of human hearing. (EPA)

Audiometry - The measurement of hearing. (EPA)

Broad-Band Noise - Noise whose energy is distributed over a broad range of frequency (generally speaking, more than one octave). (EPA)

Condensation (Compression) - An area of dense or compact particles caused by wave motion.

Continuous Noise - On-going noise whose intensity remains at a measurable level (which may vary) without interruption over an indefinite period or a specified period of time. (EPA)

Deafness - One hundred percent impairment of hearing associated with an organic condition. Note: This is defined for medical and cognate purposes as the hearing threshold level for speech or the average hearing threshold level for pure tones of 500, 1000 and 2000 Hz in excess of 92 dB. (EPA)

Decibel - The decibel is one tenth of a bel. Thus, the decibel is a unit of level when the base of the logarithm is the tenth root of ten, and the quantities concerned are proportional to power.

Note 1: Examples of quantities that qualify are power (any form), sound pressure squared, particle velocity squared, sound intensity, sound-energy density, voltage squared. Thus, the decibel is a unit of sound-pressure-squared level; it is common practice, however, to shorten this to sound pressure level because ordinarily no ambiguity results from so doing.

Note 2: The logarithm to the base the tenth root of 10 is the same as ten times the logarithm to the base 10; e.g., for a number X^2, $\log_{10^{1/10}} X^2 = 10 \log_{10} X^2 = 20 \log_{10} X$. This last relationship is the one ordinarily used to simplify the language in definitions of sound pressure level, etc. (American National Standard Acoustical Terminology (SI.1 - 1960 (R1971)).

Equivalent Sound Level - The level of a constant sound which, in a given situation and time period, has the same sound energy as does a time-varying sound. Technically, equivalent sound level is the level of the time-weighted, mean square, A-weighted sound pressure. The time interval over which the measurement is taken should always be specified. (EPA)

Environmental Noise - By Sec 3(11) of the Noise Control Act of 1972, the term "environmental noise" means the intensity, duration, and character of sounds from all sources. (EPA)

Frequency - The number of sound waves which pass a given point in one second. Frequency is measured in "cycles per second" (cps) or Hertz (Hz).

Hearing Loss - Impairment of auditory sensitivity; an elevation of a hearing threshold level.

Hearing Threshold Level for an Ear - The amount by which the threshold of hearing for an ear (or the average for a group) exceeds the standard audiometric reference zero (ISO, 1964; ANSI, 1969). Units: decibels.

Hertz - Unit of frequency equal to one cycle per second.

Impulse Noise - Noise of short duration (typically, less than one second) especially of high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition. Note: Impulse noise is characteristically associated with such sources as explosions, impacts, the discharge of firearms, the passage of supersonic aircraft (sonic boom) and many industrial processes.

Infrasonic - Having a frequency below the audible range for man (customarily deemed to cut off at 16 Hz).

Noise - 1. Any undesired sound. By extension, noise is any unwanted disturbance within a useful frequency band, such as undesired electric waves in a transmission channel or device.

2. An erratic, intermittant, or statistically random oscillation.

Note 1: If ambiquity exists as to the nature of the noise, a phrase such as "acoustic noise" or "electric noise" should be used.

Note 2: Since the above definitions are not mutually exclusive, it is usually necessary to depend upon context for the distinction. (American National Standard Acoustical Terminology SI.1 - 1960 (R1971)).

Noise Contour - A line connecting points of equal sound intensity.

Noise Exposure - The cumulative acoustic stimulation reaching the ear of the person over a specified period of time (e.g., a work shift, a day, a working life, or a lifetime). (EPA)

Noise Hazard (Hazardous Noise) - Acoustic stimulation of the ear which is likely to produce noise-induced permanent threshold shift in some of a population. (EPA)

Noise-Induced Permanent Threshold Shift (NIPTS) - Permanent threshold shift caused by noise exposure corrected for the effect of aging (presbyacusis). (EPA)

Noise-Induced Temporary Threshold Shift (NITTS) - Temporary threshold shift caused by noise exposure. (EPA)

Octave - 1. The interval between two sounds having a basic frequency ratio of two.

2. The pitch interval between two tones such that one tone may be regarded as duplicating the basic musical import of the other tone at the nearest possible higher pitch.

Note 1: The interval, in octaves, between any two frequencies is the logarithm to the base 2 (or 3.322 times the logarithm to the base 10) of the frequency ratio.

Note 2: The frequency ratio corresponding to an octave pitch interval is approximately, but not always exactly, 2:1. (American National Standard Acoustical Terminology SI.1 - 1960 (R 1971)).

Peak Noise - As used in this Element, peak noise refers to the statistical noise level L_{10}, measured at peak hour traffic.

Psychoacoustics - A branch of the science of acoustics which deals with hearing, the sensations produced by sounds, and the problems of communication. (Webster)

Sound Level - The quantity in decibels measured by a sound level meter satisfying the requirements of American National Standards Specification for Sound Level Meters S1.4-1971. Sound level is the frequency-weighted sound pressure level obtained with the standardized dynamic characteristic "fast" or "slow" and weighting A, B, or C; unless indicated otherwise, the A-weighting is understood. The unit of any sound level is the decibel, having the unit symbol dB. (EPA)

Sound Exposure Level - The level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second. (EPA)

Sound Pressure Level - In decibels, 20 times the logarithm to the base ten of the ratio of a sound pressure to the reference sound pressure of 20 micropascals (20 micronewtons per square meter). In the absence of any modifier, the level is understood to be that of a mean-square pressure.

Rarefaction - Area of minimum pressure in a medium transverved by compression waves.

Ultrasonic - Having a frequency above the audible range for man (conventionally deemed to cut off at 20,000 Hz).

Appendix F

Current Noise, Year 1979

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	6	NOISE LEVEL AT 50 FT L_{eq} Day	Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
Ave I	Btn Fwy & 20th W	8874	515	128	45	3	1	4/12'	X			64.5	57.3	66			X				65	150	350	680
	20th W & 10th W	10217	593	148	40	3	1	4/12'	X			64.5	57.5	66			X				65	150	350	680
	10th W & Division	16610	163	240	35	3	1	4/0'	X			65.0	58.3	66.5			X				70	160	370	720
	Division & 10th E	13657	792	197	35	3	1	4-2/0'	X			64.7	57.5	66.0			X				65	150	350	680
	10th E & 20th E	6020	349	87	45	3	1	2/0'	X			63.5	56.0	64.5			X					115	280	580
	20th E & 25th E	5726	332	83	50	3	1	2/0'	X			65.5	58.5	67			X				75	180	400	760
	25th E & 30th E	3795	220	55	50	3	1	2/0'	X			64.0	56.7	65			X				50	120	300	600
	30th E & 40th E	3359	195	49	55	3	1	2/0'	X			63.8	56.5	65			X				50	120	300	600
Lancaster Blvd.	20th W & 15th W	3611	209	52	45	3	1	3/0'	X			61.0	53.0	62			X					75	180	400
	15th W & 10th W	5603	325	81	35	3	1	3-4/0'	X			60.5	53.1	61.5			X					70	160	370
	10th W & Sierra Hwy	13197	765	191	25	3	1	4/0'	X			63.6	57.0	65			X				50	120	300	600
	5th E & 10th E	3429	199	50	25	3	1	2/0'	X			57.2	49.5	58			X						90	200
Ave J	30th W & Fwy	4674	271	68	45	3	1	2/0'	X			63.1	[illegible]	64.5			X					115	280	580
	20th W & 15th W	11864	688	171	35	3	1	4/0'	X			63.7	[illegible]	66			X				65	150	350	680
	10th W & Sierra Hwy	19879	1153	287	35	3	1	4/0'	X			65.6	59.0	67			X				75	180	400	760
	Sierra Hwy & Division	24570	1425	355	35	3	1	4/0'	X			66.5	59.8	68			X				90	200	480	800
	Division & 10th E	18569	1077	268	35	3	1	4/12'	X			65.8	58.5	67			X				75	180	400	760
	10th E to 20th E *	----	----	--	50	2	1	2/0'	X			----	-----	67			X					115	280	580
	20th E to 40th E *	-------	----	---	55	3	1	2/0'	X			----	-----	65			X				50	120	300	600
Ave K	35th W & 30th W	4379	254	63	45	3	1	4/10'	X			61.[illegible]	54	62.5			X					82	195	420

* [illegible] of traffic data, presumed similar to Ave. I.

envicom

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	>6	NOISE LEVEL AT 50 FT Leq Day	Leq Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
	30th W & 20th W	8592	498	124	35	3	1	4/10'	X			62.5	55	63.5			X					95	230	510
	20th W & Fwy	11662	676	168	45	3	1	4/0'	X			65.5	58.5	67.5			X				82	195	420	730
	Fwy & 10th W	16051	931	232	35	3	1	4/0'	X			65	58	66.5			X				70	160	370	720
	10th W & Sierra Hwy	13841	803	200	35	3	1	4/0'	X			64.8	58.0	66.5			X				70	160	370	720
	Sierra Hwy & Division	12010	697	173	35	3	1	4/12'	X			64.2	57	65.5			X				57	135	330	650
	Division & 5th E	6822	396	99	45	3	1	2/0'	X			64	57	65.5			X				57	135	330	650
Ave L	40th W & 30th W	7053	409	102	50	3	1	2/0'	X			66.3	60.2	68			X				[illegible]	200	480	800
	30th W & 20th W	5678	329	82	50	3	1	2/0'	X			66	59	67.5			X				82	195	420	780
	20th W & Fwy	5069	294	73	50	3	1	4/0'	X			65	58	66.5			X				70	160	370	720
	Fwy & 10th W	4747	275	69	40	3	1	4/0'	X			61.5	54	62.5			X					82	195	420
	10th W & Sierra Hwy	3749	217	54	55	3	1	2/0'	X			64.3	58	[illegible]			X				65	150	350	[illegible]
Ave M	40th W & 20th W	3355	195	48	50	3	1	2/0'	X			64	57.7	[illegible]			[illegible]				65	150	350	[illegible]
	20th W & 10th W	3427	199	50	50	3	1	2/0'	X			64	57.7	[illegible]			[illegible]				65	150	350	[illegible]
	Sierra Hwy & 10th E	4664	271	67	55	3	1	2/0'	X			65.3	59.5	67			X				75	180	400	[illegible]
30th St. W	Ave J to Ave J-8	4623	268	67	45	3	1	2/0'	X			65	58	66.5			X				70	160	370	720
	Ave J-8 to Ave K	4623	268	67	45	3	1	4/10'	X			61.8	54.5	63			X					90	200	480
	Ave K & Ave L	3918	227	57	50	3	1	2/0'	X			64.3	58	66			X				65	150	350	680
20th St. W	Lancaster Blvd & Ave J	5318	308	77	45	3	1	4/0'	X			62.5	55	63.5			X					95	230	510
	Ave J & Ave K	4319	251	62	45	3	1	4/0'	X			61.5	54	62.5			X					82	195	420
	Ave K & Ave L	4284	248	62	50	3	1	2/0'	X			64.8	58	66.5			X				70	160	370	720

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	≥6	NOISE LEVEL AT 50 FT. L_{eq} Day	L_{eq} Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
15th St W	Ave I & Lancaster Blvd	4902	284	71	35	3	1	2/0'	X			60.5	53	61.5			X					70	160	370
	Lancaster Blvd & Ave J	6166	358	89	45	3	1	4/0'	X			63	55.5	64			X					100	250	560
	Ave J & Ave K	7688	446	111	45	3	1	4/0'	X			64	56.6	65			X				50	120	300	600
10th St W	Ave H & Ave I	9067	526	131	40	3	1	4/0'	X			64.2	56.7	65.5			X				57	135	330	650
	Ave I & Lancaster Blvd	16350	948	236	35	3	1	4/0'	X			65	58	66.5			X				70	160	370	720
	Lancaster Blvd & Ave J	20271	1176	293	35	3	1	4/0'	X			65.7	59	67			X				75	180	400	760
	Ave J & Ave K	19799	1148	286	35	3	1	4/0'	X			65.6	58.8	67			X				75	180	400	760
	Ave K & Ave L	8565	497	124	55	3	1	4-2/0'	X			68	61	69.5			X				115	280	580	1000
	Ave L & Ave M	4981	289	72	55	3	1	2/0'	X			65.5	59.5	67.5			X				82	195	420	780
Sierra Hwy	Ave H & Ave I	6323	367	91	45	5	2	4/0'	X			64	57.5	65.5			X				57	135	330	650
	Ave I & Lancaster Blvd	13357	775	193	35	5	2	4/0'	X			65	58	66.5			X				70	160	370	720
	Lancaster Blvd & Ave J	15550	902	225	35	5	2	4/0'	X			65.8	58.5	67			X				75	180	400	760
	Ave J & Ave K	15539	901	224	40	5	2	4/0'	X			67.3	60	68.5			X				95	230	510	850
	Ave K & Ave L	15929	924	230	55	5	2	4/0'	X			70.5	63.7	72			X			75	180	400	760	1330
	Ave L & Ave M	13600	789	196	55	5	2	4/0'	X			69.7	63.5	71.5			X			70	160	370	720	1210
Division St	Ave H & Ave I	3514	204	51	40	3	1	2/0'	X			60.2	54	62			X					75	180	400
	Ave I & Lancaster Blvd	4560	264	66	35	3	1	2/0'	X			60	53	61.5			X					70	160	370
	Lancaster Blvd & Ave J	8422	488	122	35	3	1	2/0'	X			62.2	55	63.5			X					95	230	510
	Ave J & Ave K	10285	597	149	40	3	1	2/0'	X			65.2	57.8	66.5			X				70	160	370	720
10th St E	Lancaster Blvd & Ave J	5106	296	74	35	3	1	2-4/0'	X			60.3	53	61.5			X					70	160	370

Appendix G

Future Noise: Year 2000

FUTURE TRAFFIC: YEAR 2000

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	≥6	NOISE LEVEL AT 50 FT L_{eq} Day	Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
Avenue H	Btn. 25th W. and 20th W.	3200	186	46	45	3	1	2/0'	X			56.3	49.5	58.0			X						90	200
	Btn 0th W & Sierra Hwy	4100	238	59	40	3	1	2/0'	X			56.7	50	58.0			X						90	200
	Btn Sierra Hwy & Division	5200	302	75	40	3	1	2/0'	X			58	5!	59.5			X						115	280
	Btn Division & 10th E	4000	232	58	40	3	1	2/0'	X			56.7	50	58.0			X						90	200
	Btn 10th E & 20th E	4400	255	64	45	3	1	2/0'	X			57.8	51	59.5			X						115	280
	Btn 20th E & 30th E	5200	302	75	45	3	1	2/0'	X			58.5	51.5	60.0			X					50	120	312
Avenue H-8	Btn 20th W & Sierra Hwy	16300	945	235	25	3	0	4/0'	X			58.5	51.8	60.0			X					50	120	310
	Btn Division & 10th E	9100	528	131	25	3	0	2/0'	X			57.2	49.7	58.5			X						95	230
Avenue I	Btn 40th W & 30th W	5100	296	74	50	3	1	2/0'	X			60.5	54	62.0			X					75	180	400
	Btn 30th W & 25th W	18700	1085	270	40	3	1	4/12'	X			62.5	56	64.0			X					100	250	560
	Btn 25th W & Fwy.	34100	1978	493	35	3	1	6/0'	X			63.8	57.3	65.5			X				57	135	330	650
	Btn Fwy & 20th W.	24200	1404	350	35	3	1	6/0'	X			62	56.2	64.0			X					100	250	560
	Btn 20th W & 10th W	25000	1450	361	35	3	1	6/0'	X			62.2	56.3	64.0			X					100	250	560
	Btn 10th W & Sierra Hwy	49600	2877	716	35	3	1	6/0'	X			65.3	59	67.0			X				75	180	400	760
	Btn Sierra Hwy & Division	38500	2233	556	35	3	1	6/0'	X			64.3	57.8	66.0			X				65	150	350	680
	Btn Division & 10th E	30700	1781	443	35	3	1	6/0'	X			63.1	56.8	65.0			X				50	[illegible]	[illegible]	630
	Btn 10th E & 20th E	22200	1288	321	35	3	1	4/0'	X			62	56	64.0			X					100	250	560
	Btn 20th E & 30th E	11300	655	163	40	3	1	4/0'	X			60.5	53.5	62.0			X					75	180	400
	Btn 30th E & 40th E	7000	406	101	45	3	1	2/0'	X			60	53.2	61.5			X					70	160	370

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	>6	NOISE LEVEL AT 50 FT L_{eq} Day	Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
Lancaster Blvd.	Btn 25th W & 20th W	9600	557	139	35	3	1	2/0'	X			58.8	52	60.5			X					57	135	330
	Btn 20th W & 10th W	16300	945	235	25	3	1	4/0'	X			58.5	52	60.0			X					50	120	310
	Btn 10th W & Division	10400	603	150	25	3	1	4/0'	X			56.5	49.7	58.[illegible]			X						90	200
	Btn Division & 10th E	17500	1015	253	25	3	1	4/0'	X			59	52.[illegible]	60.5			X					57	135	330
	Btn 10th E & 20th E	8400	487	121	35	3	1	2/0'	X			58.3	51	59.5			X						115	280
	Btn 20th E & 30th E	13300	771	192	35	3	1	2/0'	X			60	53.7	62.0			X					75	180	4[illegible]
Avenue J	Btn 40th W & 30th W	9000	522	130	45	3	1	2/0'	X			61.2	54	62.5			X					82	195	420
	Btn 30th W & 25th W	14200	824	205	4[illegible]	3	1	4/0'	X			61.[illegible]	[illegible]	63.0			X					90	200	480
	Btn 25th W & Fwy.	19900	1154	287	35	3	1	4/0'	X			61.2	55.3	63.0			X					90	200	480
	Btn Fwy & 10th W.	30400	1763	439	35	3	1	6/0'	X			63.0	56.7	65.0			X				55	120	310	630
	Btn 10th W & Sierra Hwy.	40700	2361	588	35	3	1	6/0'	X			64.[illegible]	58	66.0			X				65	150	35[illegible]	680
	Btn Sierra Hwy & Division	53800	3120	777	35	3	1	6/0'	X			[illegible]	[illegible]	67.5			X				82	1[illegible]	420	780
	Btn Division & 10th E	33200	1926	480	35	3	1	6/0'	X			63.7	57.2	65.5			X				57	13[illegible]	330	650
	Btn 10th E & 20th E	22700	1317	328	35	3	1	4/10'	X			62	56	64.0			X					1[illegible]	250	[illegible]
	Btn 20th E & 30th E	11900	690	172	40	3	1	4/10'	X			60.7	53.7	62.0			X					75	180	400
	Btn 30th E & 40th E	5500	319	79	45	3	1	2/0'	X			59.8	51	60.5			X					57	135	330
Avenue J-8	Btn 40th W & 30th W	4700	273	68	35	3	0	2/0'	X			55.5	48.[illegible]	57.0			X						75	180
	Btn 30th W & 20th W	10100	586	146	25	3	0	4/0'	X			56.5	49.3	58.0			X						90	200
	Btn 20th W & 10th W.	5000	290	72	25	3	1	2/0'	X			54.5	47.5	56.0			X						65	150
	Btn Division & 10th E	7700	447	111	25	3	0	2/0'	X			56.5	49.2	57.5			X						82	195

Traffic - 2000 cont'd

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	>6	NOISE LEVEL AT 50 FT L_{eq} Day	L_{eq} Night	L_{dn}	SIDELINE E	D	L	DISTANCE TO L_{dn} LEVELS (FEET) 80	75	70	65	60	55	50
Avenue J-8	Btn 10th E & 20th E	11500	667	166	25	3	0	4/0'	X			57	50.0	58.5			X						95	230
Avenue K	Btn 40th W & 30th W	9300	539	134	45	3	1	4/10'	X			60.1	53.3	61.5			X					70	160	370
	Btn 30th W & 20th W	14000	812	202	40	3	1	4/10'	X			61.4	55	63.0			X					90	200	480
	Btn 20th W & Fwy.	18700	1085	270	35	3	1	4/10'	X			61.5	55	63.0			X					90	200	480
	Btn Fwy & 10th W	47000	2726	679	35	3	1	6/0'	X			65.2	58.5	66.5			X				70	160	370	720
	Btn 10th W & Division	45900	2662	663	35	3	1	6/0'	X			65	58.4	66.5			X				70	160	370	720
	Btn Division & 10th E	43300	2511	625	35	3	1	6/0'	X			64.8	58.3	66.5			X				70	160	370	720
	Btn 10th E & 20th E	37300	2163	539	35	3	1	6/0'	X			64.1	57.7	66.0			X				65	150	350	680
	Btn 20th E & 30th E	20300	1177	293	35	3	1	4/0'	X			61.8	55.5	63.5			X					95	230	510
	Btn 30th E & 40th E	5800	336	84	45	3	1	2/0'	X			59	52.2	60.5			X					57	135	330
Avenue K-8	Btn 40th W & 30th W	8800	510	127	35	3	0	2/0'	X			58.5	51.3	60.0			X					50	120	310
	Btn 30th W & 20th W	12300	713	178	25	3	0	4/0'	X			57.4	50.3	58.5			X						95	230
	Btn 20th W & 10th W	18300	1061	264	25	3	0	4/0'	X			59	52.3	60.5			X					57	135	330
	Btn 10th W & Sierra Hwy	37700	2187	545	25	3	0	6/0'	X			64.3	57.5	66.0			X				65	150	350	680
	Btn Division & 5th E	14000	812	202	25	5	2	4/0'	X			58.2	51.5	59.5			X						115	280
	Btn 5th E & 15th E	7000	406	101	25	3	0	2/0'	X			56	49.0	57.5			X						82	195
Avenue L	Btn 40th W & 30th W	10500	609	152	45	3	1	2/0'	X			61.5	54.8	63.0			X					90	200	480
	Btn 30th W & 20th W.	20000	1160	289	40	3	1	4/0'	X			62.3	56.5	64.5			X					115	280	580
	Btn 20th W & Fwy.	21300	1235	308	35	3	1	4/0'	X			62	55.5	63.5			X					95	230	510
	Btn Fwy & 10th W	45100	2616	651	35	5	2	6/0'	X			65.2	59.3	67.0			X				75	180	400	760

ROUTE	SEGMENT	TRAFFIC FLOW			AVE. SPEED	% TRUCKS		LANES/ MEDIAN	% GRADE			NOISE LEVEL AT 50 FT			SIDELINE			DISTANCE TO L_{dn} LEVELS (FEET)						
		Daily (ADT)	Day (VPH)	Night (VPH)		Day	Night		0-2	3-5	>6	L_{eq} Day	L_{eq} Night	L_{dn}	E	D	L	80	75	70	65	60	55	50
Avenue L (cont'd)	Btn 10th W & Sierra Hwy.	46700	2709	675	35	5	2	6/0'	X			65.5	59	67.0			X				75	180	400	760
	Btn Sierra Hwy & 10th E.	28500	1653	412	35	5	2	4/0'	X			63.1	57	65.0			X				50	120	310	630
	Btn 10th E & 20th E	32000	1856	46[illegible]	35	3	1	[illegible]/0'	X			63.5	57	65.0			X				50	120	310	630
	Btn 20th E & 30th E	20500	1189	2[illegible]	35	3	1	4/0'	X			61.[illegible]	55.5	63.5			X					95	230	510
	Btn 30th E & 40th E	3600	209	52	45	3	1	2/0'	X			57	50	58.5			X						95	230
Avenue L-8	Btn 40th W & 30th W	7600	441	110	35	3	0	2/0'	X			57.7	50.8	59.[illegible]			X						100	250
	Btn 30th W & 20th W	13200	766	191	25	3	0	2/0'	X			58.5	51.8	60.0			X					50	120	310
Avenue M	Btn 40th W & 30th W	10900	632	157	45	3	1	4/0'	X			60.[illegible]	54	62.5			X					82	195	420
	Btn 30th W & 20th W	16700	969	241	40	3	1	4/0'	X			62.1	55.7	64.0			X					100	250	560
	Btn 20th W & Fwy.	8700	505	126	40	3	1	2/0'	X			60.5	53.5	62.0			X					75	180	400
	Btn Fwy & 10th W	19100	1108	276	40	5	2	4/0'	X			63	56.[illegible]	64.[illegible]			X					115	280	580
	Btn 10th W & Sierra Hwy.	20000	1160	289	35	5	2	4/0'	X			62	55.7	64.[illegible]			X					100	250	560
	Btn Sierra Hwy & 10th E	12000	696	173	40	[illegible]	[illegible]	4/0'	X			61	54.5	62.5			X					82	195	420
40th St. W	Btn Ave J & Ave K	4900	284	71	50	3	1	2/0'	X			60.4	54	[illegible]			X					75	18[illegible]	4[illegible]
35th St. W	Btn Ave J & Ave K	4100	238	59	35	3	0	2/0'	X			54.7	47.8	[illegible]6.0			X						65	150
30th St. W	Btn Ave H & Ave I	10100	586	146	40	3	1	4/0'	X			60	53	61.5			X					70	160	370
	Btn Ave I & Ave J	7100	412	103	40	3	1	2/0'	X			59.7	53	61.0			X					65	150	350
	Btn Ave J & Ave K	6900	400	100	35	3	1	4/10'	X			57.3	50.5	59.0			X						100	250
	Btn Ave K & Ave L	10800	626	156	35	3	1	4/10'	X			59.3	52.[illegible]	61.0			X					65	150	350
	Btn Ave L & Ave M	4200	244	61	35	3	1	2/0'	X			55	48.3	56.5			X						70	160

Traffic - 2000 cont'd

ROUTE	SEGMENT	TRAFFIC FLOW Daily (ADT)	Day (VPH)	Night (VPH)	AVE. SPEED	% TRUCKS Day	Night	LANES/ MEDIAN	% GRADE 0-2	3-5	6	NOISE LEVEL AT 50 FT Leq Day	Leq Night	Ldn	SIDELINE E	D	L	DISTANCE TO Ldn LEVELS (FEET) 80	75	70	65	60	55	50
25th St. W	Btn Ave I & Lancaster Blvd	7700	447	111	25	3	0	2/0'	X			56.2	49.2	57.5			X						82	195
	Btn Lancaster & Ave J-8	6700	389	97	25	3	0	2/0'	X			56.8	48.8	57.5			X						82	195
	Btn Ave J-8 & Ave K-8	4400	255	64	25	3	0	2/0'	X			53.8	46.7	55.0			X						50	120
	Btn Ave K-8 & Ave L-8	5300	307	77	25	3	0	2/0'	X			54.6	47.5	56.0			X						65	150
20th St. W	Btn Ave H & Ave I	4200	244	61	40	3	1	2/0'	X			57	50.3	58.5			X						95	230
	Btn Ave I & Ave J	7400	429	107	35	3	1	2/0'	X			57.7	50.8	59.0			X						100	250
	Btn Ave J & Fwy	15000	870	217	35	3	1	4/0'	X			60.7	54	62.0			X					75	180	400
	Btn Fwy & Ave K	10000	580	144	35	3	1	4/0'	X			59	52	60.5			X					57	135	330
	Btn Ave K & Ave L	9600	557	139	35	3	1	2/0'	X			58.8	51.9	60.5			X					57	135	330
	Btn Ave L & Ave M	7000	406	101	40	3	1	2/0'	X			59.5	52.7	61.0			X					65	150	350
15th St. W	Btn Ave I & Ave J	6900	400	100	35	3	0	4/0'	X			57.3	50.5	59			X						100	250
	Btn Ave J & Ave K	7800	452	113	35	3	0	4/0'	X			58	50.8	59.5			X						115	280
10th St. W	Btn Ave H & Ave I	27000	1566	390	35	3	1	4/0'	X			63	56.8	65.0			X				50	120	310	630
	Btn Ave I & Ave J	41500	2407	599	35	3	1	6/0'	X			64.6	58.2	66.5			X				70	160	370	720
	Btn Ave J & Ave K	48000	2784	693	35	3	1	6/0'	X			65.2	58.9	67.0			X				75	180	400	760
	Btn Ave K & Ave L	40600	2355	586	35	3	1	6/0'	X			64.5	58	66.0			X				65	150	350	680
	Btn Ave L & Ave M	45800	2656	662	35	5	2	6/0'	X			65.3	59	67.0			X				75	180	400	760
Sierra Hwy	Btn Ave H & Ave I	19600	1137	283	35	5	2	4/0'	X			61.7	55.5	63.5			X					95	230	510
	Btn Ave I & Ave J	20900	1212	302	35	5	2	4/0'	X			62.3	56	64.6			X					100	250	560
	Btn Ave J & Ave K	37500	2175	542	35	5	2	6/0'	X			64.5	58	66.0			X				65	150	350	680

ROUTE	SEGMENT	TRAFFIC FLOW			AVE. SPEED	% TRUCKS		LANES/ MEDIAN	% GRADE			NOISE LEVEL AT 50 FT			SIDELINE			DISTANCE TO L_{dn} LEVELS (FEET)						
		Daily (ADT)	Day (VPH)	Night (VPH)		Day	Night		0-2	3-5	>6	L_{eq} Day	L_{eq} Night	L_{dn}	E	D	L	80	75	70	65	60	55	50
Sierra Hwy	Btn Ave K & Ave L	28600	1659	413	35	5	2	4/0'	X			63.6	57.5	[illegible]			X				57	135	330	650
	Btn Ave L & Ave M	23800	1380	344	35	5	2	4/0'	X			63	56.5	64.5			X					115	280	580
Division St	Btn Ave H & Ave I	5000	290	72	40	5	2	2/0'	X			58.3	51.5	60.0			X					50	120	310
	Btn Ave I & Ave J	10100	586	146	35	3	1	4/0'	X			59	52	60.5			X					57	135	330
	Btn Ave J & Ave K	12000	696	173	35	3	1	4/0'	X			59.7	53	61.0			X					65	150	350
	Btn Ave K & Ave K-8	14000	812	202	25	5	2	4/0'	X			58.2	51.7	60.0			X					50	120	310
5th St. E	Btn Ave H-8 & Ave I	4900	284	71	25	3	0	2/0'	X			51.4	47	55.5			X						57	135
	Btn Ave I & Ave J	7600	441	110	25	3	0	2/0'	X			56.2	49.2	[illegible]			X						82	135
	Btn Ave J & Ave K	11700	679	169	25	3	0	2/0'	X			58.1	51.1	[illegible]			X						115	280
	Btn Ave K & Ave L	16800	974	243	25	3	0	4/0'	X			59.6	51.8	60.5			X					57	135	330
10th St. E	Btn Ave H & Ave I	15600	905	225	40	3	1	4/0'	X			61.8	55.2	63.5			X					95	230	510
	Btn Ave I & Ave J	20900	1212	[illegible]	35	3	1	4/0'	X			62	[illegible]	63.5			X					95	230	510
	Btn Ave J & Ave K	27400	1589	[illegible]	[illegible]	3	1	[illegible]	X			63	[illegible]	[illegible]			X				50	120	310	630
	Btn Ave K & Ave L	30600	1775	[illegible]	35	3	1	6/0'	X			63.1	56.8	[illegible]			X				50	120	310	630
	Btn Ave L & Ave M	23000	1334	[illegible]	35	5	2	4/0'	X			62.7	[illegible]	[illegible]			X					115	280	580
15th St. E	Btn Ave H-8 & Lanc. Blvd.	10000	580	144	25	3	0	4/0'	X			56.5	49.5	58.0			X						90	200
	Btn. Lan. Bld & Ave J-8	9200	534	133	25	3	0	2/0'	X			[illegible]	50	58.5			X						95	230
20th St. E	Btn Ave I & Ave J	21400	1241	309	35	3	1	4/0'	X			62	55.7	64.0			X					100	250	560
	Btn Ave J & Ave K	25100	1456	363	35	3	1	4/0'	X			62.7	56.5	[illegible]			X					115	280	580
	Btn Ave K & Ave L	14800	858	214	35	3	1	4/0'	X			60.7	53.9	[illegible]			X					75	180	400

Traffic - 2000 cont'd

ROUTE	SEGMENT	TRAFFIC FLOW			AVE. SPEED	% TRUCKS		LANES/ MEDIAN	% GRADE			NOISE LEVEL AT 50 FT			SIDELINE			DISTANCE TO L_{dn} LEVELS (FEET)						
		Daily (ADT)	Day (VPH)	Night (VPH)		Day	Night		0-2	3-5	6	L_{eq} Day	L_{eq} Night	L_{dn}	E	D	L	80	75	70	65	60	55	50
25th St. E	Btn Ave H-8 & Lancas. Blvd.	4100	255	64	40	3	0	2/0'	X			57.3	50.2	58.5			X						95	230
30th St. E	Btn Ave H & Ave I	4700	273	68	40	3	1	/20'	X			57.5	50.6	59.0			S						100	250
	Btn Ave I & Ave J	3800	220	55	40	3	1	2/0'	X			56.5	49.7	58.0			X						90	200
	Btn Ave J & Ave K	17100	992	247	40	3	1	4/0'	X			62.4	55.7	64.0			X					100	250	560
	Btn Ave K & Ave L	17600	1021	254	40	3	1	4/0'	X			62.5	55.8	64.0			X					100	250	560
Antelope Valley Fwy	N of Ave H	15900	922	230	55	8.7	8.7	6/100'	X			64.5	58	66.0		30'					5	88	112	300
	Btn Ave H & Ave I	14500	641	209	55	8.7	8.7	6/100'	X			64	57.5	65.5			X				57	135	330	650
	Btn Ave I & Ave J	51000	2958	737	55	8.7	8.7	6/100'	X			69.5	63.5	71.5	20'			1st Flr 2nd Flr		– 70	– 160	370	720	1210
	Btn Ave J & Ave K	43300	2511	625	55	8.7	8.7	6/100'	X			68.8	67.8	71.0	20'			1st Flr 2nd Flr		– 65	– 150	350	680	1160
	Btn Ave K & Ave L	64600	3747	933	5	8.7	8.7	6/100'	X			70.5	61.5	72.5			X			82	195	420	780	1340
	Btn Ave L & Ave M	35600	2065	514	55	8.7	8.7	6/100'	X			69.9	62.0	71.0		30'				65	88	112	300	650
	S of Ave M	52100	3022	753	55	8.7	8.7	6/100'	X			69.5	63.5	71.5		30'				70	90	120	335	690

G-7

Appendix H

SUMMARY OF NOISE MEASUREMENTS

TAKEN IN THE CITY OF LANCASTER, 14 AUGUST 1979

Station No.	Location	Distance to Primary Source[1]	Time[2]	Vehicles per hour[3]	Statistical Noise Level, dBA L_{10}	L_{50}	L_{90}
1	Paraclete High School	100 ft. to 30th St. W.	8:25 a.m.	61	53 ± 3	41	<40
2	Valley View School	50 ft. to Ave. L-8	8:55 a.m.	50	53^{+15*}_{-5}	41	<40
3	Antelope Valley College	100 ft. to Ave. K	9:27 a.m.	156	57^{+5*}_{-3}	47	41
4	Antelope Valley College	115 ft. to 30th St. W.	9:55 a.m.	176	61^{+5*}_{-3}	49	41
5	Desert View School	60 ft. to Ave. H-10	10:29 a.m.	NT	49^{+11*}_{-5}	43	41
6	Mariposa School	50 ft. to Ave. H-6	11:01 a.m.	NT	49 ± 3	43	<40
7	Monte Vista School	50 ft. to Kettering St.	11:29 a.m.	58	59 ± 3	49	45
8	Pinte Intermediate School	30 ft. to H-11	12:05 p.m.	NT	55^{+3*}_{-4}	49	43
		200 ft. to 5th St. E.		144			
9	Linda Verde School	30 ft. to 5th St. E.	1:16 p.m.	130	63^{+5*}_{-7}	47	43
10	Antelope Valley High School	60 ft. to Division St.	1:57 p.m.	NC	67^{+3}_{-1}	61	53
11	Lancaster Continuing School	145 ft. to 5th St. E.	2:30 p.m.	130	53^{+5*}_{-3}	49	47
12	El Dorado School	100 ft. to Pondero	3:00 p.m.	-	53 ± 3	49	47
		550 ft. to Ave. J		864			
13	Joshua School	60 ft. to 2nd St. E.	3:37 p.m.	65	59 ± 3	53	51
		90 ft. to Ave. J-8		43			
14	Sierra School	50 ft. to Heaton; most noise due to 10th St. W. and aircraft	4:06 p.m.	50	61 ± 3	53	51
15	Lancaster Community Hospital	65 ft. to 10th St. W.	4:30 p.m.	762	67^{+1}_{-3}	63	55
16	Sunnydale School	60 ft. to Ave. J-8	5:00 p.m.	288	59^{+3}_{-1}	53	51
17	Parkview School	70 ft. to Ave. J	5:35 p.m.	NC	73^{+1}_{-3}	67	61
18	Antelope Valley Convalescent Hospital	30 ft. to 15th St. W.	6:02 p.m.	353	69 ± 3	59	53

(continued)

Station No.	Location	Distance to Primary Source[1]	Time[2]	Vehicles per hour[3]	Statistical Noise Level, dBA L_{10}	L_{50}	L_{90}
19	Antelope Valley Hospital	115 ft. to 15th St. W.	6:20 p.m.	454	61±3	55	53
20	Lancaster Convalescent Hospital	40 ft. to Ave. J	6:45 p.m.	NC	71±3	65	53

Notes:

1 - Distance measured by steel tape from noise meter to nearest lane of road.

2 - Time given is the midpoint of a minimum nine-minute sample period.

3 - As calculated by vehicle counts made during noise measurement.

* - Not statistically significant sample.

NT - Essentially no traffic.

NC - No count.

Appendix I

Federal Programs
with Potential for Implementing
Noise Abatement Programs

FEDERAL PROGRAMS WITH POTENTIAL FOR IMPLEMENTING NOISE-ABATEMENT PROGRAMS

(Source: Extracted from Beland, R.D. et al, November 1972, "Aircraft Noise Impact, Planning Guidelines for Local Agencies", HUD Report TE/NA 472.)

1971 CFDA[1] PROGRAM NUMBER	PROGRAM NAME, ADMINISTERING AGENCY	ELIGIBLE						FORM OF ASSISTANCE						WORK PHASE			
		State	Local Government	LPA	Planning Agency	Nonprofit Corp	Corp, Individual	Project Grant	Formula Grant	Loan	Insurance	Tech Assistance	Research	Data Acquisition	Plan, Prog. Devel.	Implementation	Admin, Info, Review
10.400-10.421	Rural Assistance Programs (DOA-FHA)	●	●	●	●	●	●	●		●						●	
10.414	Resource Conservation and Development Loans (DOA-FHA)		●	●		●				●						●	
10.419	Watershed Protection and Flood Prevention Loans (DOA-FHA)		●	●		●				●					●	●	
10.650	State and Private Forestry Cooperation (DOA-FS)	●	●	●		●	●		●			●			●	●	●
10.901	Resource Conservation and Development (DOA-SCS)	●	●	●				●				●			●	●	
10.902	Soil & Water Conservation (DOA-SCS)	●	●	●	●	●	●					●		●			
10.903	Soil Survey (DOA-SCS)	●	●	●	●	●	●					●		●			
10.904	Watershed Protection and Flood Prevention (DOA-SCS)	●	●	●		●		●				●			●	●	
11.001-11.006	Census Services (DOC, CB)	●	●	●	●	●	●					●		●			
11.300	Economic Development-Grants and Loans for Public Works and Development Facilities (DOC-EDA)	●	●	●		●		●		●						●	
11.301	Economic Development - Loans for Businesses and Development Companies (DOC-EDA)					●	●			●							
11.302	Economic Development-Planning Assistance (DOC-EDA)		●	●	●			●						●	●		●
11.303	Economic Development-Technical Assistance (DOC-EDA)	●	●	●	●	●	●	●				●		●			
11.400	Geodesy (Geodetic Control Surveys) (DOC-ESSA)	●	●	●	●							●		●			
11.600	Building Code (Regulations) Assistance to States (DOC-NBS)	●										●		●	●		
11.650	National Technical Information Service (NTIS) (DOC-NBS)	●	●	●	●	●	●					●		●			
11.800	Minority Business Enterprise (OMBE) (DOC-OMBE)	●	●	●	●	●	●					●		●	●		
12.106	Small Flood Control Projects (DOD-COE)	●	●	●								●				●	
13.210-13.223	Hill-Burton Program, Health Facilities Construction (HEW-HSMHA)	●	●	●		●			●			●				●	
13.227	Health Statistics Analysis and Technical Assistance (HEW-HSMHA)	●	●	●	●							●		●		●	
13.327-13.329	Environmental Health Sciences - Fellowships, Research, Training (HEW-NIH)						●	●						●		●	
14.103	Interest Reduction Payments-Rental and Cooperative Housing for Lower Income Families (236) (HUD-HPMC/FHA)					●	●	●		●	●					●	
14.104	Interest Subsidy-Acquisition and Rehabilitation of Homes for Resale to Lower Income Families (235 (j)) (HUD-HPMC/FHA)	●	●	●		●		●		●	●					●	
14.105	Interest Subsidy-Homes for Lower Income Families (235 (i)) (HUD-HPMC/FHA)						●	●		●	●					●	
14.106	Interest Subsidy-Purchase of Rehabilitated Homes by Lower Income Families (235 (j)) (HUD-HPMC/FHA)						●	●		●	●					●	
14.107	Major Home Improvement Loan Insurance-Homes in Urban Renewal Areas (220 (h)) (HUD-HPMC/FHA)						●			●	●					●	
14.108	Major Home Improvement Loan Insurance-Housing Outside Urban Renewal Areas (203 (k)) (HUD-HPMC/FHA)						●			●	●					●	
14.109	Major Home Improvement Loan Insurance-Rental Housing in Urban Renewal Areas (220 (h)) (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.112	Mortgage Insurance, Construction or Rehabilitation of Condominium Projects (234 (d)) (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.117, 14.118	Mortgage Insurance-Homes (203 (b)) (HUD-HPMC/FHA)						●			●	●					●	

[1] Catalog of Federal Domestic Assistance

[2] Direct provision of specialized services

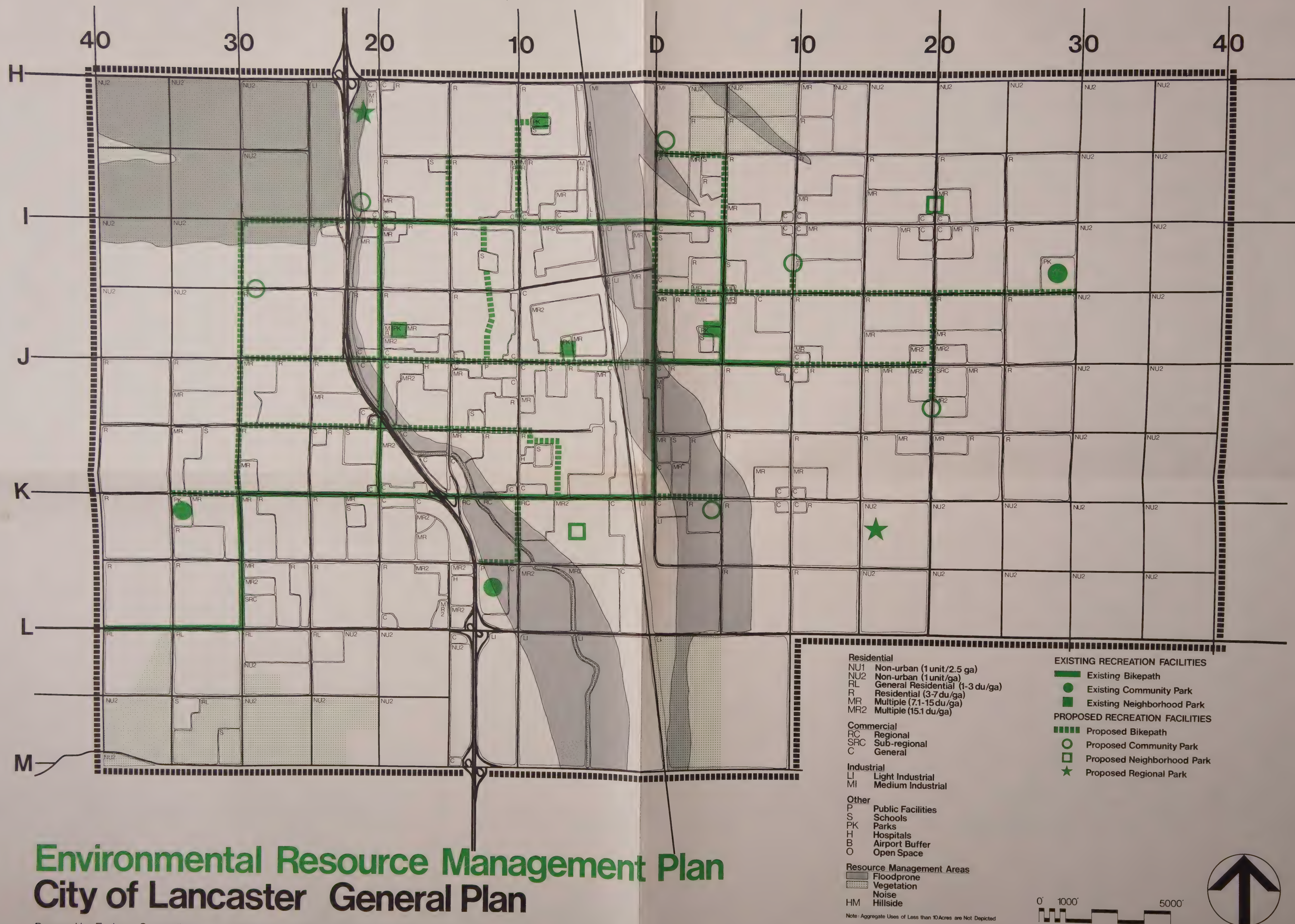
1971 CFDA PROGRAM NUMBER	PROGRAM NAME, ADMINISTERING AGENCY	ELIGIBLE						FORM OF ASSISTANCE						WORK PHASE			
		State	Local Government	LPA	Planning Agency	Nonprofit Corp	Individual	Project Grant	Formula Grant	Loan	Insurance	Tech Assistance	Research	Data Acquisition	Plan. Prog. Devel.	Implementation	Admin. Info. Review
14.120	Mortgage Insurance-Homes for Low and Moderate Income Families (221(d)(2)) (HUD-HPMC/FHA)						●			●	●					●	
14.122	Mortgage Insurance-Homes in Urban Renewal Areas (220) (HUD-HPMC/FHA)						●			●	●					●	
14.125	Mortgage Insurance-Land Development and New Communities (HUD-HPMC/FHA)					●	●			●	●					●	
14.128, 14.129	Mortgage Insurance-Hospitals, Nursing Homes (HUD-HPMC/FHA)					●	●			●	●					●	
14.134	Mortgage Insurance-Rental Housing (207) (HUD-HPMC/FHA)					●	●										
14.135	Mortgage Insurance-Rental Housing for Moderate Income Families (221(d)(4)) (HUD-HPMC/FHA)						●			●	●					●	
14.137	Mortgage Insurance-Rental Housing for Low & Moderate Income Families, Market Interest Rate (221(d)(3)) (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.138	Mortgage Insurance-Rental Housing for the Elderly (231) (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.139	Mortgage Insurance-Rental Housing in Urban Renewal Areas (220) (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.141	Nonprofit Housing Sponsor Loans-Planning Projects for Low and Moderate Income Families (HUD-HPMC/FHA)					●		●		●						●	
14.142	Property Improvement Loan Insurance-All Existing Structures (HUD-HPMC/FHA)					●	●									●	
14.145	Property Improvement Loan Insurance-Existing Multifamily Dwellings (HUD-HPMC/FHA)					●	●									●	
14.146	Public Housing-Acquisition and Construction (HUD-HPMC/FHA)			●				●								●	
14.147	Public Housing-Home-Ownership for Low Income Families (HUD-HPMC/FHA)			●					●	●						●	
14.148	Public Housing-Leased (HUD-HPMC/FHA)			●					●							●	
14.149	Rent Supplements-Rental Housing for Lower Income Families (HUD-HPMC/FHA)					●	●	●								●	
14.152	Mortgage Insurance-Experimental Homes (HUD-HPMC/FHA)	●	●	●		●	●									●	
14.153	Mortgage Insurance-Experimental Projects Other Than Housing (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.154	Mortgage Insurance-Experimental Rental Housing (HUD-HPMC/FHA)	●	●	●		●	●			●	●					●	
14.202	Community Development Training Grants (HUD-CP&M)	●						●							●		●
14.203	Comprehensive Planning Assistance ("701") (HUD-CP&M)	●	●		●			●						●	●		●
14.207	New Communities-Loan Guarantees (HUD-CP&M)	●	●	●		●	●			●	●				●		
14.208	New Communities-Supplementary Grants for Public Facilities (HUD-CP&M)	●	●	●				●	●							●	
14.211	Surplus Land for Community Development (HUD-CP&M)	●	●	●		●	●					●				●	
14.214	Urban Systems Engineering Demonstration Grants (HUD-CP&M)	●	●	●	●			●						●	●		●
14.216	Governmental Management-Technical Assistance and Information Services (HUD-CP&M)	●	●		●							●		●	●		●
14.300	Model Cities Supplementary Grants (HUD-CD)	●	●					●								●	●
14.301	Basic Water and Sewer Facilities-Grants (HUD-CD)	●	●	●				●								●	
14.302	Neighborhood Facilities Grants (HUD-CD)		●	●				●								●	
14.303	Open Space Land Program (HUD-CD)	●	●	●				●								●	
14.304	Public Facility Loans (HUD-CD)	●	●	●						●						●	
14.305	Housing Rehabilitation Loans (HUD-CD)						●			●						●	
14.306	Neighborhood Development (HUD-CD)		●	●				●		●	●					●	
14.307	Urban Renewal Projects (HUD-CD)		●	●				●		●	●					●	
14.308	Housing Rehabilitation Grants (HUD-CD)						●	●								●	
14.400	Equal Opportunity in Housing (HUD-OEO)						●					●				●	

[1] Sale, exchange or donation of property or goods, or use of public lands.

1971 CFDA PROGRAM NUMBER	PROGRAM NAME, ADMINISTERING AGENCY	ELIGIBLE						FORM OF ASSISTANCE						WORK PHASE			
		State	Local Government	[illegible]	Planning Agency	[illegible]	[illegible]	Project Grant	Formula Grant	Loan	Insurance	Tech Assistance	Research	Data Acq.	Plan. Prog.	Implementation	Admin. [illegible]
14.504	Urban Planning Research & Demonstration (701(B)) (HUD-ORT)	●	●	●	●	●	●	●						●			●
14.607	Public Housing-Modernization of Projects (HUD-HM)			●					●	●						●	
15.100-15.131	Special Programs for Indian Tribes (DOI-BIA)		●	●	●	●	●	●	●	●	●	●				●	
15.200	Land Lease for Airports (DOI-BLM)	●	●	●		●	●									●	
15.202	Public Land for Recreation, Public Purposes and Historic Monuments (DOI-BLM)	●	●	●		●										●	
15.205	Exchange of Public Lands (DOI-BLM)	●					●										
15.400	Outdoor Recreation-Acquisition & Development (DOI-BOR)	●						●								●	
15.401	Outdoor Recreation State Planning-Financial Assistance (DOI-BOR)	●						●						●	●		●
15.402	Outdoor Recreation Technical Assistance (DOI-BOR)	●	●	●	●	●	●					●		●	●		●
15.503	Small Reclamation Projects (DOI-BR)	●	●	●				●								●	
15.601	Animal Damage Control (DOI-BSF)	●	●	●	●	●	●					●		●	●	●	
15.609	Wildlife Enhancement (DOI-BSF)	●	●	●	●	●	●					●		●	●	●	
15.611	Wildlife Restoration (DOI-BSF)	●							●							●	
15.801	Map Information Office (DOI-GS)	●	●	●	●	●	●					●		●			
15.803	Topographic Surveys and Mapping (DOI-GS)	●	●	●	●							●		●			
15.906	Park and Recreation Technical Assistance (DOI-NPS)	●	●	●	●							●			●	●	
20.102	Airport Development Aid Program (ADAP) (DOT-FAA)	●	●	●				●				●				●	
20.103	Airport Planning Grant Program (PGP) (DOT-FAA)	●	●	●	●			●						●	●		●
20.205	Highway Planning and Construction (DOT-FHWA)	●							●							●	
20.211	Traffic Operations Program to Increase Capacity and Safety (TOPICS) (DOT-FHWA)	●							●							●	
20.212	Economic Growth Centers and Development Highway Demonstration Projects (DOT-FHWA)	●							●					●	●		
20.300	High Speed Ground Transportation Research and Development (HSGT) (DOT-FRA)	●	●	●	●	●	●	●					●	●			
20.400	Transportation Planning Information - Environment and Urban Systems (DOT)	●	●	●	●	●	●					●		●	●		
20.500-20.505	Urban Mass Transportation Capital Improvement Grants, Loans, Research (DOT-UMTA)	●	●	●	●	●	●	●		●			●	●	●	●	
22.001	Intergovernmental Relations Advisory Service (ACIR)	●	●	●	●	●	●					●		●	●		●
23.001-23.013	Special Programs for Appalachia (ARC)	●	●	●		●		●		●		●				●	
26.001	Air Carrier Payments (CAB)						●	●								●	
26.002	Air Transportation-Consumer Complaints (CAB)						●					●		●			
28.001	Coastal Plains Regional Economic Development (CPRC)	●	●	●	●	●		●						●	●	●	●
39.002	Disposal of Federal Surplus Real Property (GSA)	●	●	●	●	●	●									●	
39.008	Federal Information Center (GSA)	●	●	●	●	●	●					●		●			
40.002	Government Publications-Sales and Distribution (GPO)	●	●	●	●	●	●					●		●			
49.002	Community Action (OEO)	●	●	●	●	●		●						●	●	●	●
49.008	Legal Services (OEO)					●		●								●	
59.001-59.012	Services to Small Business-Grants, Loans, Technical Assistance (SBA)	●	●	●	●	●	●	●		●	●	●				●	
59.013	State & Local Development Company Loans (SBA)		●	●		●				●	●					●	
64.112	Veterans Farm Loans (VA)						●			●	●					●	
64.113, 64.114	Veterans Housing-Direct Loans, Guaranteed/Insured Loans (VA)						●			●	●					●	
66.400	Construction Grants for Wastewater Treatment Works (EPA)	●	●	●				●								●	
71.001	Housing Opportunity Allowance Program (FHLBB)						●	●								●	

ABBREVIATIONS USED IN APPENDIX I

ACIR	-	Advisory Commission on Intergovernmental Relations
ARC	-	Appalachian Regional Commission
CAB	-	Civil Aeronautics Board
CPRC	-	Coastal Plains Regional Commission
DOA-FHA	-	Department of Agriculture, Farmers Home Administration
DOA-FS	-	Department of Agriculture, Forest Service
DOA-SCS	-	Department of Agriculture, Soil Conservation Service
DOC-DB	-	Department of Commerce - Census Bureau
DOC-ESSA	-	Department of Commerce, Environmental Science Services Administration
DOC-NBS	-	Department of Commerce, National Bureau of Standards
DOC-OMBE	-	Department of Commerce, Office of Minority Business Enterprise
DOD-COE	-	Department of Defense, Army Corps of Engineers
DOI-BIA	-	Department of the Interior, Bureau of Indian Affairs
DOI-BLM	-	Department of the Interior, Bureau of Land Management
DOI-BOR	-	Department of the Interior, Bureau of Outdoor Recreation
DOI-BR	-	Department of the Interior, Bureau of Reclamation
DOI-BSF	-	Department of the Interior, Bureau of Sport Fisheries & Wildlife
DOI-GS	-	Department of the Interior, Geological Survey
DOI-NPS	-	Department of the Interior, National Park Service
DOT-FAA	-	Department of Transportation, Federal Aviation Administration
DOT-FHWA	-	Department of Transportation, Federal Highway Administration
DOT-FRA	-	Department of Transportation, Federal Railway Administration
DOT-UTMA	-	Department of Transportation, Urban Mass Transit Administration
EPA	-	Environmental Protection Agency
FHLBB	-	Federal Home Loan Bank Board
GPO	-	Government Printing Office
GSA	-	General Services Administration
HEW-HSMHA	-	Department of Health, Education and Welfare, Health Services and Mental Health Administration
HEW-NIH	-	Department of Health, Education and Welfare, National Institutes of Health
HUD-CD	-	Department of Housing and Urban Development, Community Development
HUD-CP&M	-	Department of Housing and Urban Development, Community Planning and Management
HUD-HPMC/FHA	-	Department of Housing and Urban Development, Housing Production and Mortgage Credit/Federal Housing Administration
HUD-OEO	-	Department of Housing and Urban Development, Office of Equal Opportunity
HUD-ORT	-	Department of Housing and Urban Development, Office of Research and Technology
OEO	-	Office of Economic Opportunity
SBA	-	Small Business Administration
VA	-	Veterans Administration



Environmental Resource Management Plan

City of Lancaster General Plan

Prepared by Envicom Corporation

Adopted 7 April 1980 · Resolution 80-16

Residential
NU1 Non-urban (1 unit/2.5 ga)
NU2 Non-urban (1 unit/ga)
RL General Residential (1-3 du/ga)
R Residential (3-7 du/ga)
MR Multiple (7.1-15 du/ga)
MR2 Multiple (15.1 du/ga)

Commercial
RC Regional
SRC Sub-regional
C General

Industrial
LI Light Industrial
MI Medium Industrial

Other
P Public Facilities
S Schools
PK Parks
H Hospitals
B Airport Buffer
O Open Space

Resource Management Areas
Floodprone
Vegetation
—65— Noise
HM Hillside

Note: Aggregate Uses of Less than 10 Acres are Not Depicted

0' 1000' 5000'

Existing Noise
City of Lancaster General Plan

Prepared by Envicom Corporation Adopted 7 April 1980 · Resolution 80-16

Residential
NU1 Non-urban (1 unit/2.5 ga)
NU2 Non-urban (1 unit/ga)
RL General Residential (1-3 du/ga)
R Residential (3-7 du/ga)
MR Multiple (7.1-15 du/ga)
MR2 Multiple (15.1 du/ga)

Commercial
RC Regional
SRC Sub-regional
C General

Industrial
LI Light Industrial
MI Medium Industrial

Other
P Public Facilities
S Schools
PK Parks
H Hospitals
B Airport Buffer
O Open Space

Resource Management Areas
Floodprone
Vegetation
—65— Noise
HM Hillside

Note: Aggregate Uses of Less than 10 Acres are Not Depicted

0' 1000' 5000'

Future Noise · Plan Capacity
City of Lancaster General Plan

Prepared by Envicom Corporation Adopted 7 April 1980 · Resolution 80-16

City of Lancaster General Plan

Prepared by Envicom Corporation Adopted 7 April 1980 · Resolution 80-16

ster General Plan

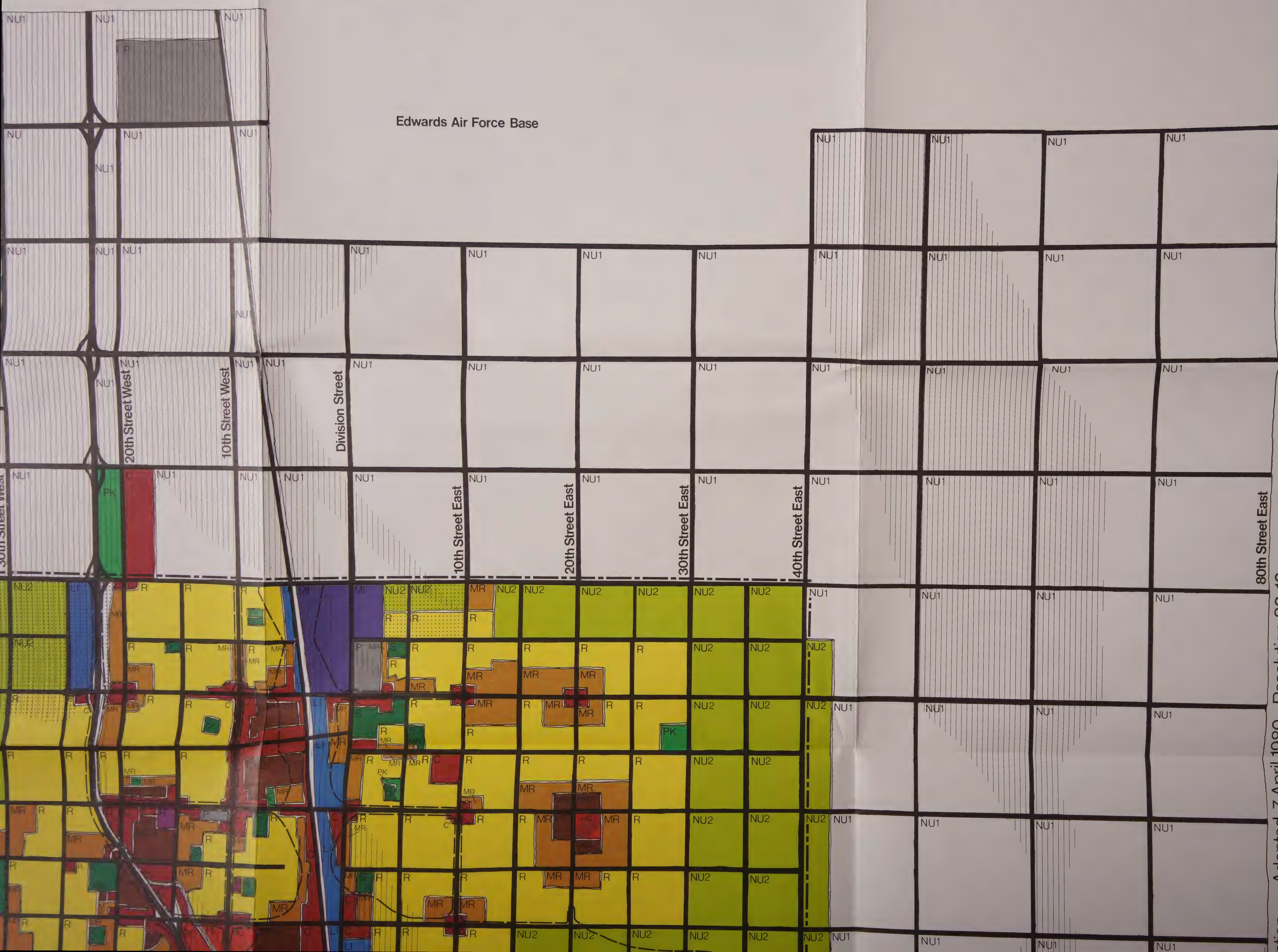
Other

- P — Public Facilities
- S — Schools
- PK — Parks
- H — Hospitals
- B — Airport Buffer
- O — Open Space

Resource Management Areas

- Floodprone
- Vegetation
- Noise
- HM — Hillside
- City Boundary

0 Miles 1 2 3



ation Adopted 7 April 1980 · Resolution 80-16

City of Lancaster Gener

Residential
- NU1 Non-urban (1 unit/2.5 ga)
- NU2 Non urban (1 unit/1 ga)
- RL General Residential (1-3 du/ga)
- R Residential (3-7du/ga)
- MR Multiple (7.1-15 du/ga)
- MR2 Multiple (15.1 du/gu)

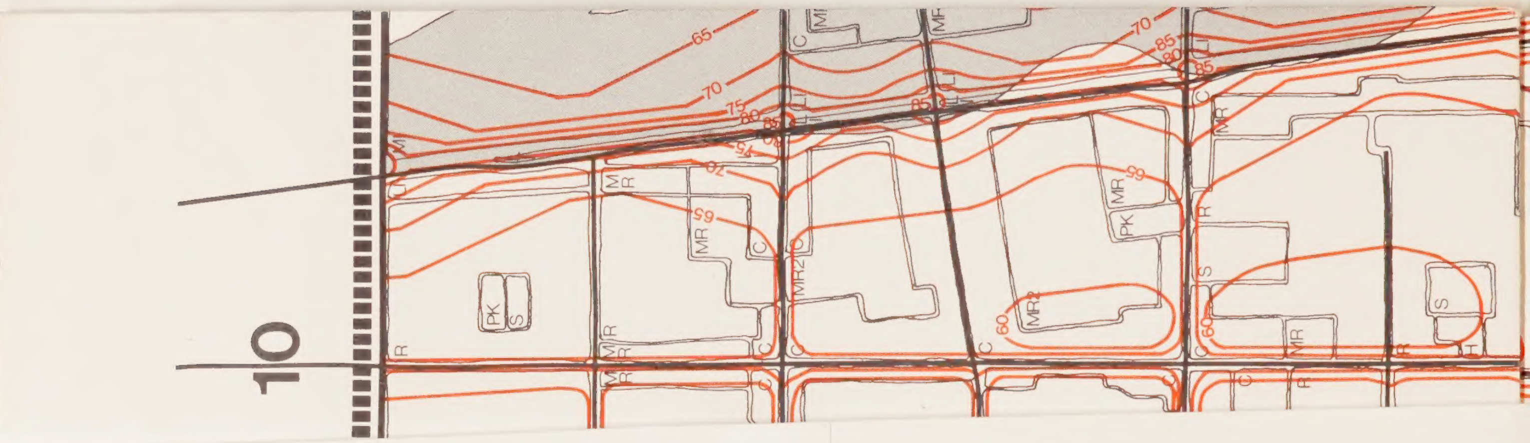
Commercial
- RC Regional
- SRC Sub-regional
- C General

Industrial
- LI Light Industrial
- MI Medium Industrial

Other
- P Public Facilities
- S Schools
- PK Parks
- H Hospitals
- B Airport Buffer
- O Open Space

Resource Management Area
- Floodprone
- Vegetation
- Noise
- HM Hillside
- City Boundary

Prepared by Envicom Corporation Adopted 7 April 1980 · Resolution 80-16


10
65
70
75
80
85
60
PK
S
MR
MR2
C
R
M
LI
H